



The COVID-19 pandemic has exposed and amplified existing social and health inequities in the Eastern Mediterranean Region, therefore protecting the public's health should be the highest priority of governments and health equity should be at the heart of all social and economic policies to help curb the spread of the virus.

Eastern Mediterranean Health Journal

IS the official health journal published by the Eastern Mediterranean Regional Office of the World Health Organization. It is a forum for the presentation and promotion of new policies and initiatives in public health and health services; and for the exchange of ideas, concepts, epidemiological data, research findings and other information, with special reference to the Eastern Mediterranean Region. It addresses all members of the health profession, medical and other health educational institutes, interested NGOs, WHO Collaborating Centres and individuals within and outside the Region.

المجلة الصحية لشرق المتوسط

هي المجلة الرسمية التي تصدر عن المكتب الإقليمي لشرق المتوسط بمنظمة الصحة العالمية. وهي منبر لتقديم السياسات والمبادرات الجديدة في الصحة العامة والخدمات الصحية والترويج لها، ولتبادل الآراء والمفاهيم والمعطيات الوبائية ونتائج الأبحاث وغير ذلك من المعلومات، وخاصة ما يتعلق منها بإقليم شرق المتوسط. وهي موجهة إلى كل أعضاء المهن الصحية، والكلية الطبية وسائر المعاهد التعليمية، وكذا المنظمات غير الحكومية المعنية، والمراكز المتعاونة مع منظمة الصحة العالمية والأفراد المهتمين بالصحة في الإقليم وخارجه.

La Revue de Santé de la Méditerranée Orientale

EST une revue de santé officielle publiée par le Bureau régional de l'Organisation mondiale de la Santé pour la Méditerranée orientale. Elle offre une tribune pour la présentation et la promotion de nouvelles politiques et initiatives dans le domaine de la santé publique et des services de santé ainsi qu'à l'échange d'idées, de concepts, de données épidémiologiques, de résultats de recherches et d'autres informations, se rapportant plus particulièrement à la Région de la Méditerranée orientale. Elle s'adresse à tous les professionnels de la santé, aux membres des instituts médicaux et autres instituts de formation médico-sanitaire, aux ONG, Centres collaborateurs de l'OMS et personnes concernés au sein et hors de la Région.

EMHJ is a trilingual, peer reviewed, open access journal and the full contents are freely available at its website:

<http://www.emro.who.int/emhj.htm>

EMHJ information for authors is available at its website:

<http://www.emro.who.int/emh-journal/authors/>

EMHJ is abstracted/indexed in the Index Medicus and MEDLINE (Medical Literature Analysis and Retrieval Systems on Line), ISI Web of knowledge, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Embase, Lexis Nexis, Scopus and the Index Medicus for the WHO Eastern Mediterranean Region (IMEMR).

© World Health Organization (WHO) 2021. Some rights reserved.

This work is available under the CC BY-NC-SA 3.0 IGO licence

(<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Disclaimer

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

The authors alone are responsible for the views expressed in this publication and they do not necessarily represent the views, decisions or policies of the institutions with which they are affiliated.

If authors are staff members of the World Health Organization, the authors alone are responsible for the views expressed in this publication and do not necessarily represent the decisions, policy or views of the World Health Organization.

Editorial

COVID-19 pandemic: a unique opportunity to 'build back fairer' and reduce health inequities in the Eastern Mediterranean Region

Ahmed Al-Mandhari, Michael Marmot, Abdul Ghaffar, Rana Hajjeh, Jessica Allen, Wasiq Khan and Maha El-Adawy217

Commentaries

The COVID-19 pandemic: an opportunity to strengthen health systems in Afghanistan

Umerdad Khudadad, Najibullah Safi, Wafa Aftab, Asrar Ali, and Sameen Siddiqi220

Professional capacity building of researchers, health-care professionals and editors of biomedical journals in the Eastern Mediterranean Region

Shaukat Ali Juwaid224

Research articles

Four-year survey of medically serious suicide attempters in Abu Dhabi

Tarek Shahrour, Muez Siddiq, Sona Mohan, Khadija El Hammasi and Taoufik Alsaadi227

Views of primary health care providers of the challenges to screening for intimate partner violence, Egypt

Eman Ibrahim, Nashwa Hamed and Lamia Ahmed233

Domestic violence among Omani women: prevalence, risk factors and help-seeking behaviour

Asma Al Kendi, Nohour Al Shidhani and Maisa Al Kiyumi242

Child maltreatment: knowledge, attitudes and reporting behaviour of physicians in teaching hospitals, Egypt

Nourhan Saeed, Eman Anwar Sultan, Naglaa Salama, Mohammed Galal and Maha Ghanem250

Prevalence and correlates of depressive symptoms in older people in the West Bank, Palestine: cross-sectional study

Manal Badrasawi and Souzan Zidan260

Effect of latitude on seasonal variations of vitamin D and some cardiometabolic risk factors: national food and nutrition surveillance

Bahareh Nikooyeh, Zahra Abdollahi, Nastaran Shariatzadeh, Ali Kalayi, Maliheh Zahedirad and Tirang Neyestani269

Salt intake and its sources in children, adolescents and adults in the Islamic Republic of Iran

Noushin Mohammadifard, Atena Mahdavi, Alireza Khosravi, Ahmad Esmailzadeh, Awat Feizi and Nizal Sarrafzadegan279

The effect of an educational intervention on awareness of various aspects of pulmonary tuberculosis in patients with the disease

Kalthoum Yousif, Mabrouka El Maki, Rosa Khalil Babikir and Hasan Abuaisa287

Moroccan Arabic version of the Quality of Life Inventory in Epilepsy (QOLIE-31): translation, cultural adaptation and psychometric validation

Maryam Alami Merrouni, Abdelkrim Janati Idrissi, Abdelazizi Lamkaddem, Filankembo Kava A.C. Samira El Fakir and Zouhayr Souirti293

Review

Views of stakeholders on factors influencing shared decision-making in the Eastern Mediterranean Region: a systematic review

Nouf Alsulamy, Andrew Lee, Praveen Thokala and Tourkiah Alessa300

Letter to the editor

Mass immunization and COVID-19: the need for continued primary health care

Rahim Badrfam and Atefeh Zandifar312

WHO events addressing public health priorities

Developing national institutional capacity for evidence-informed policy-making for health314



Ahmed Al-Mandhari *Editor-in-Chief*

Arash Rashidian *Executive Editor*

Ahmed Mandil *Deputy Executive Editor*

Phillip Dingwall *Managing Editor*

Editorial Board

Zulfiqar Bhutta

Mahmoud Fahmy Fathalla

Rita Giacaman

Ahmed Mandil

Ziad Memish

Arash Rashidian

Sameen Siddiqi

Huda Zurayk

International Advisory Panel

Mansour M. Al-Nozha

Fereidoun Azizi

Rafik Boukhris

Majid Ezzati

Hans V. Hogerzeil

Mohamed A. Ghoneim

Alan Lopez

Hossein Malekafzali

El-Sheikh Mahgoub

Hooman Momen

Sania Nishtar

Hikmat Shaarbaf

Salman Rawaf

Editorial assistants

Nadia Abu-Saleh, Suhaib Al Asbahi (graphics),

Diana Tawadros (graphics)

Editorial support

Guy Penet (French editor)

Eva Abdin, Fiona Curlet, Cathel Kerr,

Marie-France Roux (Technical editors)

Ahmed Bahnassy, Abbas Rahimiforushani, Manar El Sheikh Abdelrahman
(Statistics editors)

Administration

Iman Fawzy, Marwa Madi

Web publishing

Nahed El Shazly, Ihab Fouad, Hazem Sakr

Library and printing support

Hatem Nour El Din, Metry Al Ashkar, John Badawi,

Ahmed Magdy, Amin El Sayed

Cover and internal layout designed by Diana Tawadros
and Suhaib Al Asbahi

Printed by WHO Regional Office for the Eastern Mediterranean, Cairo,
Egypt

COVID-19 pandemic: a unique opportunity to ‘build back fairer’ and reduce health inequities in the Eastern Mediterranean Region

Ahmed Al-Mandhari,¹ Michael Marmot,² Abdul Ghaffar,³ Rana Hajjeh,⁴ Jessica Allen,⁵ Wasia Khan⁶ and Maha El-Adawy⁷

¹Regional Director, World Health Organization Regional Office for the Eastern Mediterranean, Cairo, Egypt. ²Chair Eastern Mediterranean Region Commission on Social Determinants of Health & Director Institute of Health Equity, University College London, London, United Kingdom. ³Executive Director Alliance for Health Policy & Systems Research, World Health Organization, Geneva, Switzerland. ⁴Director Programme Management, World Health Organization Regional Office for the Eastern Mediterranean, Cairo, Egypt. ⁵Deputy Director, Institute of Health Equity, University College London, London, United Kingdom. ⁶Advisor Health Promotion & Social Determinants of Health, World Health Organization Regional Office for the Eastern Mediterranean, Cairo, Egypt. ⁷Director Healthier Populations, World Health Organization Regional Office for the Eastern Mediterranean, Cairo, Egypt. (Correspondence to: Wasia Khan: khanwa@who.int).

Citation: Al-Mandhari A; Marmot M; Ghaffar A; Hajjeh R; Allen J; Khan W; et al. COVID-19 pandemic: a unique opportunity to ‘build back fairer’ and reduce health inequities in the Eastern Mediterranean Region. *East Mediterr Health J.* 2021;27(3):217-219 <https://doi.org/10.26719/2021.27.3.217>

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>)

Evidence has shown that some of the major causes of health inequities arise from the conditions in which people are born, grow, live, work and age, in addition to a wider set of forces and systems shaping individuals’ and societies’ health and well-being. Such conditions are known as the ‘social determinants of health’ (1). However, efforts to address these determinants have remained challenging and unsatisfactory in many parts of the world, including in the Eastern Mediterranean Region. Policies to contain the ongoing COVID-19 pandemic have further exposed and amplified the existing and even created new dimensions in social and health inequities, as we elaborate further below. Meanwhile, the pandemic offers a unique opportunity to tackle inequities and build back fairer.

To address these issues, the World Health Organization Regional Director for the Eastern Mediterranean took the initiative to establish the Commission on Social Determinants of Health, which was convened in November 2019 and tasked to analyse health inequities and recommend strategic actions to effectively pursue social justice in health and well-being in the Region. The forthcoming Commission’s report reveals path-breaking insights into the state of health inequity, the daily life conditions and structural issues, which aggravate inequities and require actions by the stakeholders (2). The Report also discusses COVID-19 both as a challenge and an opportunity to build back fairer in the Region.

The notified number of deaths from COVID-19 is low in the Region compared to other WHO regions; however, as the Commission report highlights, the containment measures are having significant impact on health equity. Those living in poverty and crowded conditions, with a lack of access to safe water, good nutrition and cooking fuel, are at higher risk of exposure to infection (3–7). Additionally, also those people are unable to effectively use preventive and protective measures against infection. It is likely that this will be more an issue among internally displaced persons (IDPs), refugees, and migrants (8,9). As the long-term impact of the pandemic unfolds, further

evidence is needed to devise context specific strategies for such vulnerable populations.

The pandemic has exposed underinvestment in health systems and the resulting inadequate access to health services in several countries in the Region (10), especially in conflict-affected settings. Essential health services have either been reduced or suspended; for example, several countries halted their regular immunization programmes during lockdowns resulting in millions of children missing necessary routine vaccination, which could have potentially serious future implications on their health and well-being (11).

The economic and social disruptions caused by the pandemic have had a devastating impact worldwide (12). The enormously damaging economic impacts of the pandemic are expected to amplify already wide social and economic inequities in the Eastern Mediterranean Region and increase health inequities, particularly in countries already facing economic sanctions. The World Bank estimated that there would be an increase of between 2.8 and 3.4 million people living in extreme poverty in this Region by the end of 2020 (12). Women, migrants, refugees and IDPs work in large numbers in informal employment in low- and lower-middle income countries and have been particularly affected by the containment measures in the Region. Heavy job losses among refugees and IDPs mean they are more dependent on humanitarian aid.

The reduction in income and rising unemployment due to the pandemic have had immediate impacts on food security and nutrition, which has mostly occurred in low- and middle-income countries and those affected by conflict (13). The low levels of access to adequate water supply in many countries also increase the risk of infection since it becomes impossible to wash frequently (14). Access to the internet in certain countries and for some groups, especially women, is very low in the Region, which poses a challenge to communicate up-to-date information about COVID-19 and lockdown measures (15,16). This digital divide has also exacerbated existing

educational inequalities (5). Students, including girls, without easy access to the internet, a mobile phone or a personal computer, will struggle with remote learning and could lead to an increase in school dropout rates and lower attainment (17,18).

It is anticipated that as a result of the COVID-19 containment measures, there could be rise in feminization of poverty, gender-based violence and child marriage. However, despite the increasing evidence, only very few countries in the Region have included violence against women and girls as essential services and as an integral part of their COVID-19 response plans (19).

However, the COVID-19 pandemic, and despite its dramatic impact, offers an unparalleled opportunity to embed greater fairness, social justice, and equity in health in the Region. Urgent action is needed in all countries to build back fairer by supporting disadvantaged groups who are faced with increasing poverty, destitution, hunger and ill-health, because no one is safe until everyone is safe. Now with the increasing availability

of COVID-19 vaccines, most countries in the Region are looking forward to COVID-19 Vaccines Global Access (COVAX) in order to implement vaccination programmes, in addition to various bilateral deals and donations. We must ensure that access to vaccines must be afforded to low-income and middle-income countries and those experiencing humanitarian crises and conflict.

The COVID-19 pandemic has demonstrated that protecting health is the highest priority for the public and that health should become a high priority in government agendas. Economic growth has been the driving vision of many governments. However, the pandemic has shown that economic growth and health go hand-in-hand and that economic growth should be considered not as a goal in itself, but as one among other steps to achieve greater health for all. Therefore, the whole-of-government and whole-of-society approaches that have been necessary to contain the pandemic should continue into plans for recovery, and building back better and fairer in the Eastern Mediterranean Region.

References

1. Marmot M. Social determinants of health inequalities. *Lancet*. 365(9464):1099–1104, Mar. 2005, doi: 10.1016/S0140-6736(05)71146-6.
2. World Health Organization Regional Office for the Eastern Mediterranean (WHO/EMRO). Build back fairer: achieving health equity in the Eastern Mediterranean Region. Cairo: WHO/EMRO; 2021 [forthcoming].
3. Marmot M, Allen J, Goldblatt P, Herd E, Morrison J. Build back fairer: the COVID-19 Marmot review. The pandemic, socioeconomic and health inequalities in England. London: University College London; 2020. (<http://www.instituteofhealthequity.org/resources-reports/build-back-fairer-the-covid-19-marmot-review/build-back-fairer-the-covid-19-marmot-review-full-report.pdf>).
4. Burstrom B, Tao W. Social determinants of health and inequalities in COVID-19. *Eur. J. Public Health*. Aug 2020;30(4):617–618 doi: 10.1093/eurpub/ckaa095
5. Hawkins RB, Charles EJ, Mehaffey JH. Socio-economic status and COVID-19-related cases and fatalities. *Public Health*. Dec 2020;189:129–134 doi: 10.1016/j.puhe.2020.09.016.
6. Wachtler B, Michalski N, Nowossadeck E, Diercke M, Wahrendorf M, Santos-Hövenner C, et al. Socioeconomic inequalities and COVID-19 - A review of the current international literature." *J. Heal. Monit.* 2020;5(S7) doi: 10.25646/7059.
7. Alkire S, Dirksen J, Nogales R, Oldiges C. Multidimensional poverty and COVID-19 risk factors: a rapid overview of interlinked deprivations across 5.7 billion people. Oxford: Oxford Poverty and Human Development Initiative; 2020. (<https://ophi.org.uk/b53/>, accessed 9 March, 2021).
8. Senghore M, Savi MK, Gnanngnon B, Hanage WP, Okeke IN. Leveraging Africa's preparedness towards the next phase of the COVID-19 pandemic. *Lancet Glob Health*. Jul 2020; 8(7):e884–e885 doi: 10.1016/S2214-109X(20)30234-5.
9. International Organization for Migration (IOM). Somalia responds: together we can fight COVID-19 in Somalia. [online] (<https://www.iom.int/donate/campaigns/somalia-responds>, accessed 9 March 2021).
10. Al-Mandhari A. Coming together in the Region to tackle COVID-19. *East Mediterr Health J.* 2020;26(9):992–993 <https://doi.org/10.26719/2020.26.9.992>
11. World Health Organization. At least 80 million children under one at risk of diseases such as diphtheria, measles and polio as COVID-19 disrupts routine vaccination efforts, warn Gavi, WHO and UNICEF. Geneva: World Health Organization; 2020 (<https://www.who.int/news/item/22-05-2020-at-least-80-million-children-under-one-at-risk-of-diseases-such-as-diphtheria-measles-and-polio-as-covid-19-disrupts-routine-vaccination-efforts-warn-gavi-who-and-unicef>, accessed 9 March, 2021).
12. The World Bank. Poverty and shared prosperity 2020: reversals of fortune. Washington DC: The World Bank; 2020 (<https://www.worldbank.org/en/publication/poverty-and-shared-prosperity>).
13. World Health Organization Regional Office for the Eastern Mediterranean (WHO/EMRO). Food crisis likely to worsen in the Middle East and North Africa as COVID-19 continues. Cairo: WHO/EMRO; 2021 (<http://www.emro.who.int/media/news/food-crisis-likely-to-worsen-in-the-middle-east-and-north-africa-as-covid-19-continues.html>, accessed 9 March, 2021).
14. Howard G, Bartram J, Brocklehurst C, Colford JM, Costa F, Cunliffe D, et al. COVID-19: urgent actions, critical reflections and future relevance of 'WaSH': Lessons for the current and future pandemics. *J. Water Health*. Oct 2020;18(5):613–630 doi: 10.2166/wh.2020.162.

15. The World Bank. Individuals using the Internet (% of population). Washington DC: The World Bank; 2020 (<https://data.world-bank.org/indicator/IT.NET.USER.ZS>, accessed 9 March 2021).
16. United Nations Economic and Social Commission for Western Asia (UNESCWA), United Nations Women. The impact of COVID-19 gender equality in the Arab Region. Beirut: UNESCWA/UN Women; 2020 (<https://www2.unwomen.org/-/media/field-office-arab-states/attachments/publications/2020/04/impact-of-covid-on-gender-equality-policy-brief.pdf?la=en&vs=4414>, accessed 9 March 2021).
17. Vegas E. School closures, government responses, and learning inequality around the world during COVID-19. Washington DC: Brookings Institution; 2020. (<https://www.brookings.edu/research/school-closures-government-responses-and-learning-inequality-around-the-world-during-covid-19/>, accessed 9 March, 2021).
18. Organisation for Economic Co-operation and Development (OECD). Response, recovery and prevention in the coronavirus (COVID-19) pandemic in developing countries : Women and girls on the frontlines. Paris: OECD; 2020 (https://read.oecd-ilibrary.org/view/?ref=136_136621-wc776cqdgx&title=Response-recovery-and-prevention-in-the-coronavirus-%28COVID-19%29-pandemic-in-developing-countries-Women-and-girls-on-the-frontlines, accessed 9 March, 2021).
19. United Nations Development Programme (UNDP). COVID-19 global gender response tracker fact sheets:Sub-Saharan Africa. New York: UNDP; 2020 (<https://www.undp.org/content/undp/en/home/librarypage/womens-empowerment/COVID-19-Global-Gender-Response-Tracker.html>, accessed 9 March, 2021)

The COVID-19 pandemic: an opportunity to strengthen health systems in Afghanistan

Umerdad Khudadad,¹ Najibullah Safi,² Wafa Aftab,³ Asrar Ali,¹ and Sameen Siddiqi³

¹Department of Emergency Medicine, Aga Khan University, Karachi, Pakistan. ²Health System Development, World Health Organization Country Office, Kabul, Afghanistan. ³Department of Community Health Sciences, Aga Khan University, Karachi, Pakistan. (Correspondence to: Umerdad Khudadad: umerhaideri47@gmail.com).

Citation: Khudadad U; Safi N; Aftab W; Ali A; Siddiqi S. The COVID-19 pandemic: an opportunity to strengthen health systems in Afghanistan. *East Mediterr Health J.* 2021;27(3):220-223. <https://doi.org/10.26719/emhj.21.007>

Received: 21/07/20; accepted: 03/02/21

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Introduction

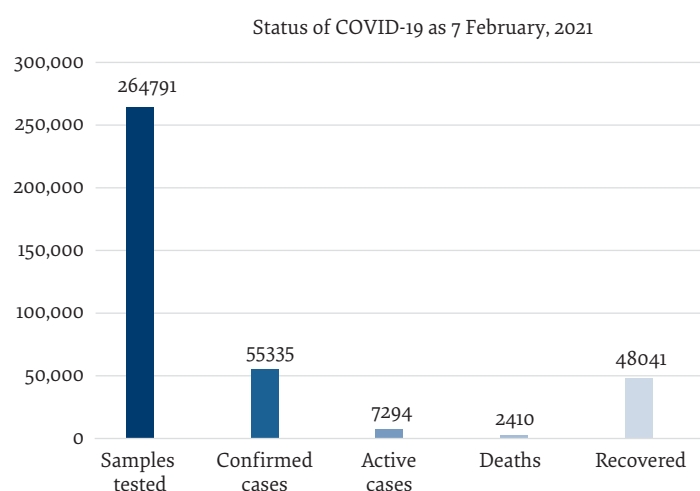
Afghanistan's health care system has already been strained by four decades of conflict and is now being threatened by the arrival of COVID-19. As of 7 February 2021, 106 million cases of COVID-19 and 2.31 million deaths have been reported in more than 180 countries (1). The readiness of Afghanistan's healthcare system to respond rapidly and effectively to the outbreak of COVID-19 remains limited.

The first case of COVID-19 in Afghanistan was reported on February 24, 2020, from the province of Herat that shares a border with the Islamic Republic of Iran (1). Since then, the number of confirmed cases of COVID-19 in Afghanistan has risen. As of 7 February 2021, there have been 55 335 confirmed cases with 2410 deaths in Afghanistan (2). According to the Herat provincial representative, 1000 Afghans return from the Islamic Republic of Iran every day and initial cases were reported among these returnees followed by community transmission across the country due to a lack of virus containment measures at the border (3). However, limited testing capacity means the number of reported cases remained low in Afghanistan. To date, Afghanistan has carried out 264 791 tests in a country of 36.6 million, and the number of confirmed cases is directly linked to the

availability of functional laboratories in the provinces (Figure 1). Since 24 February 2020, the number of reported cases has increased as laboratory capacity has increased. Of the total number of cases, 73% are reported from 6 provinces (Kabul, Nangahar, Paktya, Kandahar, Herat and Balkh) where functional COVID-19 diagnostic facilities exist.

The International Organization for Migration (IOM) and the United Nation High Commission for Refugees (UNHCR) confirmed that nearly 1000 Afghans are returning from the Islamic Republic of Iran each day (3). Before containing the spread of COVID-19 by control measures, including border closure, as of 7 January 2021, just 1200 of the 200 000 returnees had been tested for the virus. The transmission of the virus in the context of Afghanistan should have been consistently high given the country's unique vulnerabilities, including porous boundaries, frequent cross-border movements, weak health system, high malnutrition rate, limited water and sanitation facilities, inequality in access to health-care services, gender-based violence, limited movement of women and high numbers of people with special needs (4). In addition, the ongoing conflicts in Afghanistan, and particularly in the first quarter of 2020 along with an attack on the Médecins Sans Frontières (MSF) operated

Figure 1 Status of COVID-19 in Afghanistan



maternity hospital in Kabul, have negatively affected the prevailing fragile health-care system (5) (Figure 2).

Deep social ties, large and extended families, high-density living, and religious and cultural beliefs make it almost impossible to practice social distancing and other preventive measures, which have contributed to the rapid transmission of the virus (3). In addition, many individuals testing positive are failing to declare their status and self-isolate due to potential social stigma as well as low levels of concern.

Response to the COVID-19 pandemic

In response to the pandemic the government of Afghanistan closed all schools and universities, banned all religious and traditional public gatherings, closed most businesses and imposed restrictions on free movement. However, all these measures were relatively ineffective as more than 55% of the population live in poverty, 66% of the population are engaged in informal employment, and in the absence of a social protection system they have to work since they survive on daily wages. Nonetheless, the economic toll has dominated, with serious consequences for daily wage workers and worsening food security. Some provision of food to low-income families has been made, but defining the eligibility for this provision has led to social tension, and distribution has had a negative impact on preventive measures like social distancing. Moreover, the continuation of lockdown will significantly increase hunger, poverty, and malnutrition, thus possibly causing greater mortality in the long term than the virus itself. The lockdown also reduced the utilization of essential health services, which may result in increased mortality in the long term from measles, diarrhea, and other common communicable and noncommunicable diseases.

The Ministry for Religious Affairs also advocated social distancing during prayers instead of mandating closure for places of worship (7), thus during Ramadan,

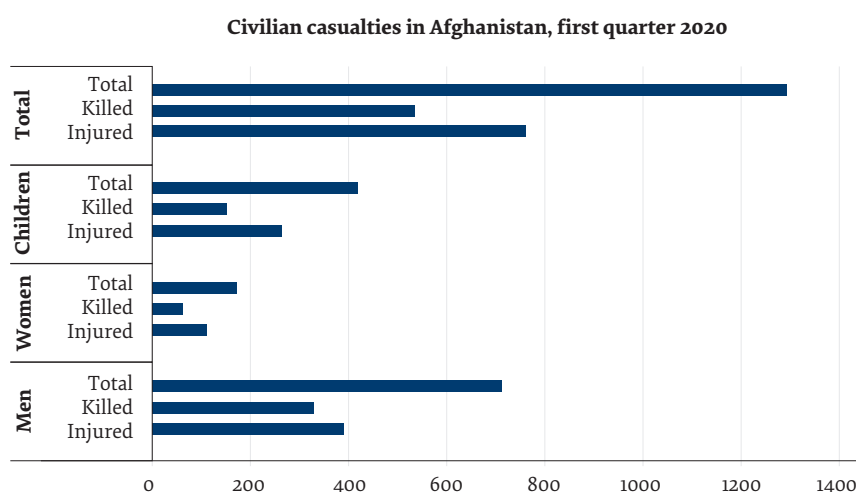
mosques continued to operate. In addition, a growing community of religious clerics is also advocating mistrust of key health messages around COVID-19. This community has been observed to be growing in the western province of Herat, which has the second-highest number of reported cases. Contact tracing has also been unsuccessful due to missing or incorrect data on registration forms and follow-ups.

Health system's response

The outbreak of any infectious disease, including COVID-19, needs a robust surveillance system to detect cases and monitor suspected cases through contact tracing (8). Afghanistan has a national surveillance system that uses four approaches to mitigating the infectious disease prevalence, including identification, investigation of cases, border screening and decentralized testing. These surveillance components have been adapted in response to the COVID-19 pandemic. Nearly 34 000 acute flaccid paralysis (AFP) volunteers have been redirected and trained to report suspected cases of COVID-19 to health facilities and rapid response teams (9). Surveillance and risk communication teams are posted at each crossing point on the borders, especially those bordering Pakistan and the Islamic Republic of Iran. Testing has also moved away from reliance on the Central Public Health Laboratory (CPHL) in Kabul, to equipping provincial reference laboratories in Herat, Balkh, Kandahar, Nangarhar, and Paktya. Routine laboratory work has been paused to specifically focus on COVID-19. Currently national processing capacity is around 2000 samples per day with 12 operational laboratories across the country (9). However, there are some contextual issues around the implementation of surveillance. Community perception of a top-down COVID-19 response has been challenging, due to low community awareness of the pandemic and certain segments of society having greater access to tests.

Another challenge that threatens the health-care system of Afghanistan in its response to COVID-19 is the

Figure 2 Civilian casualties in Afghanistan, first quarter 2020



Source: United Nations Assistance Mission in Afghanistan (UNAMA) (6)

shortage of health-care workers. There are only 9.4 skilled health workers (nurses, midwives and paramedics) and 1.9 physicians per 10 000 population (10). According to the World Health Organization Global Health Workforce Alliance, 23 skilled health workers per 10 000 people are required to carry out all critical health functions (11). This challenge is increased by the lack of personal protective equipment and low level of security in the remote areas of Afghanistan. This has a significant, immediate and adverse impact on the delivery and availability of health-care facilities to both the general population and health-care workers.

Much of the health-care services in Afghanistan are financed through international organizations. In terms of funding to support the COVID-19 response, the World Bank allocated an additional funding of US\$ 100.4 million for strengthening coordination, surveillance, laboratories, provision of supplies, capacity building, Rapid Response Teams and continuation of essential health services. Rapid Response Team implementation in 31 out of 34 provinces is contracted out to nongovernmental organizations using US\$ 46 million funding (of the total US\$ 100.4 million) to strengthen isolation wards, case management and the continuation of existing essential services. A multi-sector humanitarian country plan for COVID-19 in Afghanistan was finalized in late March 2020, requiring US\$ 108.1 million, to provide 6.1 million people across all clusters with life-saving assistance. This strategic funding was based on response to the activities for up to three months from the beginning of the pandemic (12). However, it is challenging to utilize these funds effectively in response to a COVID-19 plan for Afghanistan.

Recommendations

Afghanistan is facing several challenges in the face of the COVID-19 pandemic and needs comprehensive strate-

gic actions to control further transmission of the virus. Afghanistan requires a multisectoral response effort to strengthen and expand the control measures including country-level coordination, robust surveillance, expanding laboratory capacity, communicating risks, and engaging communities. One recommendation could be an establishment of a crisis management team in government, with the potential of analyzing and monitoring trends in the country to ensure a wider multi-sectoral preparedness response. It is also important to reinforce the continuation of all non-pharmaceutical interventions that include practicing frequent handwashing, following respiratory etiquettes, social distancing and wearing masks.

Afghanistan needs a more systematic approach to social protection. The pandemic has provided Afghanistan with an opportunity to establish a vulnerability-based comprehensive social protection system that provides information on geographic and wealth distribution of the population to tackle the issue of financial disparities and inequalities. Protecting the lower wealth quintiles will allow the country to cope with future crises effectively.

It is equally important that the Afghanistan government along with donors and partners should recognize the significance of community-level engagement in war-ridden areas of the country for effective, culturally sensitive, and demand-driven participatory response to COVID-19. The long-term effect of such engagement would also positively impact the peace process in the country. In addition, Funding agencies and donors needs to strengthen the system of accountability to allow the effective utilization of funds and aids. The utilization of funds needs to be more directed towards local needs and preparing health system to response effectively against adversities.

References

1. World Health Organization. Coronavirus disease 2019 (COVID-19): situation report, 61. Geneva: World Health Organization; 2020.
2. World Health Organization. Coronavirus disease 2019 (COVID-19): situation report, 72. Geneva: World Health Organization; 2020.
3. Mehrdad E. T How Afghanistan failed to contain COVID-19. *The Diplomat*. March 27, 2020 (<https://thediplomat.com/2020/03/how-afghanistan-failed-to-contain-covid-19/>).
4. Shah J, Karimzadeh S, Al-Ahdal TMA, Mousavi SH, Zahid SU, Huy NT. COVID-19: the current situation in Afghanistan. *The Lancet Global Health*. 2020;8(6) [https://doi.org/10.1016/S2214-109X\(20\)30124-8](https://doi.org/10.1016/S2214-109X(20)30124-8)
5. Kazemi SR, Muzhary F. Covid-19 in Afghanistan (4): A precarious interplay between war and epidemic. *Afghanistan Analysts Network*. 19 June 2020. (<https://www.afghanistan-analysts.org/en/reports/war-and-peace/covid-19-in-afghanistan-4-a-precarious-interplay-between-war-and-epidemic/>).
6. United Nations Assistance Mission in Afghanistan (UNAMA). More than 500 civilians killed in Afghanistan conflict during first quarter 2020. 27 April 2020 (<https://unama.unmissions.org/more-500-civilians-killed-afghanistan-conflict-during-first-quarter-2020>).
7. Ansar M. Afghan clerics ban religious, political gatherings amid COVID-19. *TOLO News*. 6 April 2020. (<https://tolonews.com/health/afghan-clerics-ban-religious-political-gatherings-amid-covid-19>).

8. Khademian Z, Sharif F, Tabei SZ, Bolandparvaz S, Abbaszadeh A, Abbasi HR. Teamwork improvement in emergency trauma departments. *Iran J Nurs Midwifery Res.* 2013;18(4):333-9.
9. United Nations Office for the Coordination of Humanitarian Affairs (OCHA). Afghanistan COVID-19 multi-sectoral response: operational situation report. 2 September 2020 (https://reliefweb.int/sites/reliefweb.int/files/resources/operational_sitrep_covid-19_2_september_2020_final.pdf).
10. Islamic Republic of Afghanistan National Statistics and Information Authority (NSIA). Afghanistan Statistical Yearbook 2018–19. July 2019. Kabul: NSIA; 2019 (https://www.nsia.gov.af:8080/wp-content/uploads/2019/11/Afghanistan-Statistical-Yearbook-2018-19_compressed.pdf).
11. World Health Organization. A universal truth: no health without a workforce. Geneva: World Health Organisation; 2013;1-104 (<https://www.who.int/workforcealliance/knowledge/resources/hrhreport2013/en/>).
12. World Health Organization. Afghanistan Brief: COVID-19 No. 19 (25 March 2020). Geneva: World Health Organization; 2020 (<https://www.who.int/workforcealliance/knowledge/resources/hrhreport2013/en/>).

Professional capacity building of researchers, health-care professionals and editors of biomedical journals in the Eastern Mediterranean Region

Shaukat Ali Juwaid¹

¹Pakistan Journal of Medical Sciences, Karachi, Pakistan (Correspondence to: Shaukat Ali Juwaid: shaukat@pjms.org.pk).

Citation: Jawaid SA. Professional capacity building of researchers, health-care professionals and editors of biomedical journals in the Eastern Mediterranean Region. *East Mediterr Health J.* 2021;27(3):224-226. <https://doi.org/10.26719/2021.27.3.224>

Received: 10/09/20; accepted: 04/02/21

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>)

Introduction

Publishing a quality peer-reviewed medical journal in low- and middle-income countries can be a frustrating experience due to human resources and financial constraints (1). In order to help, guide and assist editors in the Eastern Mediterranean Region, the World Health Organization Eastern Mediterranean Regional Office (WHO/EMRO) hosted a conference for health science journals at its headquarters in Cairo, Egypt (October 2003), where in the Eastern Mediterranean Association of Medical Editors (EMAME) was formally established (2-3). WHO/EMRO played a vital role in the establishment of EMAME and contributed significantly towards its development during the initial years.

Subsequently, a training course for editors in Cairo was organized by WHO/EMRO in 2009 (4), and was followed by a 'train the trainer's' course for editors in the Eastern Mediterranean Region (EMR) at Shiraz University of Medical Sciences, Islamic Republic of Iran, during 14-17 November, 2011, at which one editor from each country in the Region was invited (5). Later courses were organized in Pakistan, Saudi Arabia and the United Arab Emirates, which was also extended to Egypt, Lebanon and the Islamic Republic of Iran.

Currently there are 673 biomedical journals in the Region that are listed in WHO Index Medicus for the Eastern Mediterranean Region (IMEMR), although the actual number of journals may be more (i.e., journals not included in IMEMR). Of these, 488 also have online editions. It includes 144 from Egypt, 273 from the Islamic Republic of Iran, 95 from Pakistan, and 31 from Saudi Arabia, while other countries in the Region also have recognized peer-reviewed journals. (Table 1) (6).

The EMAME Executive Council has organized a number of workshops on medical writing, peer review, publication ethics, and training courses for editors in different countries of the Region. This included a three-day workshop on scientific writing and publishing organized in Dubai in collaboration with the Dubai Health Authority (22-24 June, 2018) and was attended by 64 participants from Gulf Region countries. This was followed by a conference on scientific writing in Riyadh,

Saudi Arabia (10 September 2018), during the Global Health Exhibition/Conference.

WHO/EMRO was also instrumental in organizing a workshop in Alexandria, Egypt, in collaboration with The High Institute of Public Health, as well as a workshop in Beirut, Lebanon, in collaboration with the International Epidemiological Association, and attended by the president of the Association of French Speaking Epidemiologists (ADELF), University of Bordeaux, France.

Upon the request of the Ministry of Health & Medical Education of the Islamic Republic of Iran, EMAME has been concentrating on research and publication ethics workshops in the country (7).

Table 1 Eastern Mediterranean Region health and biomedical journals (October 2020)

Country	No. journals (IMEMR) n = 673	No. online journals n = 488
Afghanistan	2	1
Bahrain	3	1
Egypt	144	57
Iraq	32	18
Islamic Republic of Iran	273	257
Jordan	9	7
Kuwait	6	5
Lebanon	11	8
Libya	6	1
Morocco	7	1
Oman	3	3
Pakistan	95	77
Palestine	3	2
Qatar	4	3
Saudi Arabia	31	26
Sudan	11	7
Syrian Arab Republic	11	3
Tunisia	9	3
United Arab Emirates	5	5
Yemen	8	3

IMEMR= Index Medicus for the Eastern Mediterranean Region

Therefore, WHO/EMRO and EMAME organized a two-day workshop on ethics in scientific writing and journal publishing for more than 25 biomedical journal editors (October 2019) at the Iran University of Medical Sciences, Tehran. The focus was on aligning science journal publishing in the Islamic Republic of Iran with international and regional ethical standards and best practices, and encouraging participants to draw on existing national, regional and international professional networks and resources (7).

Training courses development

Until a few years ago researchers in the Region had few incentives or recognition in being published. Today, the situation is rapidly changing and publication in quality research journals can credit academic promotion. However, lack of training in the art of medical writing remains a major problem for most new writers and novice researchers, who find it extremely difficult to find good mentors. Likewise, editors of biomedical journals are also faced with numerous problems including poor quality manuscripts, difficulty in finding good and reliable reviewers, lack of familiarity by authors with online submissions systems, and limited human and financial resources (1).

Most EMR biomedical journal editors had previously gained their skills through hands-on experience, since no certificate or diploma courses were in existence in the Region. However, this changed with the suggestion to start a Certificate Course in Medical Journalism during the Eastern Mediterranean Medical Journals Conference (EMMJ4) held in Bahrain in 2008 (8). The Islamic Republic of Iran took the initiative with the introduction of a Master's degree in Medical Journalism at Shiraz University of Medical Sciences in 2009 (9).

Following the EMMJ7 Medical Journals Conference held in Shiraz (2015), it was also decided to start a course in medical journalism at the University of Health Sciences (UHS), Lahore, Pakistan. This initiative resulted in proposals for a certificate in medical editing course, as well as an advanced version, after which following successful completion students would then be eligible to enroll in a Master's degree in Medical Journalism at UHS. The Certificate Course in Medical Editing commenced in 2019 after approval by UHS and was a joint project between the university and the Pakistan Association of Medical Editors (PAME) (10-11). The 6-month course covers scientific writing, copy editing, peer review, production, scientific misconduct, impact factor, publication ethics, Open Access, news and feature writing, and functional English, and is conducted in-classroom and online (blended). Graduates in medicine, dentistry and allied health sciences (i.e. nursing, physiotherapy and pharmacy) are eligible to enroll in the course.

The Advanced Course in Medical Editing is expected to start during 2021, which will also include one week's internship with scientific journals recognized for this purpose by UHS and PAME. Only those who have successfully completed the certificate are eligible for enrollment. The Master's degree in Medical Journalism is expected to be offered 2024.

It is with immense satisfaction that Pakistan has become the second country in the Region after the Islamic Republic of Iran to have such a course, providing opportunities to health-care professionals who wish to take up medical journalism as a career or who seek an additional qualification. This development is expected to greatly facilitate the improvement in standards of medical journalism and also promote the art of medical writing and scientific publishing in the Region.

References

1. Problems faced by editors of peer reviewed medical journals. *Saudi Med J*. 2004;25(Supple 1):447-451
2. Jawaid SA. Birth of Eastern Mediterranean Association of Medical Editors (EMAME). Editorial; *Pak J Med Sci*. 2004;20(4):279-282.
3. Proceedings of first regional conference on medical journals publishing organized by WHO EMRO at Cairo, Egypt in October 2003. *Pak J Med Sci*. 2003;19(4):330-333.
4. Tim Albert Training (<https://www.timalbert.co.uk/training/about-tim-albert-training/>, accessed 17 October, 2020).
5. Handjani F. Medical Editors should now concentrate on improving the quality and contents of their journals. The Free Library (<https://www.thefreelibrary.com/Medical+Editors+should+now+concentrate+on+improving+the+quality+and...-a0274873285>, accessed 20 October, 2020).
6. World Health Organization Regional Office for the Eastern Mediterranean (WHO/EMRO). IMEMR journals directory by country. Cairo: WHO/EMRO; 2020 (<http://www.emro.who.int/e-library/imemr/imemr-journals-directory-by-country.html>, accessed 17 October, 2020).
7. EMAME Secretary Report (<http://www.emro.who.int/images/stories/emame/emame-secretary-report.pdf?ua=1>, accessed 19 October, 2020).
8. Jawaid SA. Lessons learnt at Eastern Mediterranean Medical Journals Conference (EMMJ4) at Bahrain. (Editorial) *Pak J Med Sci*. 2008;24(6):769-71.
9. Shiraz University of Medical Sciences. Medical journalism (<https://www.mastersportal.com/studies/195085/medical-journalism.html>, accessed 19 October, 2020).

10. Jawaid SA, Jawaid M. Professional capacity building of Health Science Journal Editors. Pak J Med Sci. 2019;35(4):879-881 <https://doi.org/10.12669/pjms.35.4.1299>
11. Certificate in Medical Editing. University of Health Sciences, Lahore, Pakistan. (<http://www.uhs.edu.pk/cme.php>, accessed 4 August, 2020).

Four-year survey of medically serious suicide attempters in Abu Dhabi

Tarek Shahrour,¹ Muez Siddiq,¹ Sona Mohan,¹ Khadija El Hammasi¹ and Taoufik Alsaadi²

¹Department of Psychiatry, Shiekh Khalifa Medical City, Abu Dhabi, United Arab Emirates (Correspondence to: Tarek Shahrour: tshahrour@seha.ae).

²American Center for Neurology and Psychiatry, Abu Dhabi, United Arab Emirates.

Abstract

Background: It is well established that attempting suicide significantly increases a person's risk of completing suicide. The risk is considered to be particularly high in the first year after the attempt. Epidemiological information on suicide is scarce in the Middle East and the countries of the GCC region and there is a need to establish a reference point to measure future changes.

Aims: We examined the epidemiology of suicide attempters requiring inpatient care in Abu Dhabi to identify associated factors that could aid local suicide prevention strategies.

Methods: This 4-year (2011–2014) study of suicide attempters in the city of Abu Dhabi included all attempters assessed by the consultation–liaison team and admitted to the 3 main governmental general hospitals.

Results: We identified 364 suicide attempts with an annual incidence of 6 per 100 000 population. The mean age was 28.7 years. Females comprised 59.6% of the attempters and were more likely to be below age 30 years. Around 40% of the psychiatric diagnoses among attempters were related to stress and 17.9% to depression. Overdosing was the chosen method in 50.6% of the attempters, with 32.7% overdosing on paracetamol and females being more likely to use this method. Just over 13% of the attempters had made one previous attempt and 2.2% had made more than one.

Conclusion: Females younger than 30 years were at higher risk of attempting suicide, with overdosing on paracetamol as the preferred method. Stress-related diagnoses were predominant in the attempters.

Keywords: suicide attempts, inpatients, methods, Abu Dhabi

Citation: Shahrour T; Siddiq M; Mohan S; El Hammasi K; Alsaadi T. Four-year survey of medically serious suicide attempters in Abu Dhabi. *East Mediterr Health J.* 2021;27(3):227–232. <https://doi.org/10.26719/emhj.20.099>

Received: 14/09/19; accepted: 18/02/20

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Introduction

It is well established that attempting suicide significantly increases the person's risk of completed suicide: prior suicide attempt is the single most important risk factor for suicide (1). A systematic review of 90 studies found the risk to be particularly high in the first year after the attempt as 2% will end up with completed suicide.

This risk continues to be high even up to 9 years after the indexed attempt (2). Similar figures were found in a follow-up study of suicide attempters in Kuwait where 1.1% of suicide attempters completed suicide within 2 years (3). Another study in England showed that the risk of a completed suicide in the year following the attempt increased 50 times compared with the risk in the general population (4). Epidemiological information on this phenomenon in the Middle East and the countries of the Gulf Cooperation Council region is scarce and there is a need to establish a reference point to measure changes to this serious phenomenon. There is an argument that this is especially true in the United Arab Emirates, a fast-changing nation in both population and lifestyle aspects. These changes might have an impact on the phenomenon of suicide. Indeed, to our knowledge there have only been 2 studies that reviewed this risk in the Emirate of Dubai (5,6); however, these studies were done

on cases of completed suicide and we are not aware of any studies that have addressed the characteristics of suicide attempters in the United Arab Emirates.

Methods

This was a retrospective survey of medical records that included all patients referred to the consultation–liaison service for a suicide attempt during 2011–2014 inclusive. The referrals came from the medical, surgical, obstetrics/gynaecology and paediatric inpatient units in the 3 main governmental general hospitals serving greater Abu Dhabi city (Shiekh Khalifa Medical City, Al Mafraq Hospital, and Al Rahba Hospital). These hospitals accept all nationalities in case of emergency, including self-harming attempters. The review team assessed the patients with at least one psychiatric interview. The team used the International Statistical Classification of Diseases (ICD-10) to establish the diagnoses (8), but did not use any structured interview or any other standardized scales in the assessment of patients. The assessment took place in the inpatient setting. The team also recorded the demographic and clinical variables of all patients. All age groups were included, with no exclusion criteria. Critical patients were not excluded as they were eventually assessed once they improved.

It is worth mentioning that private hospitals are obliged by law to refer all cases of suicide attempt to one of the 3 main governmental general hospitals indicated above. This ensured that all patients needing admission for the treatment of a suicide attempt in greater Abu Dhabi were included in this study.

All screened patients were included in the study and missing data were identified. The study was approved by the ethical and research committee of Sheikh Khalifa Medical City.

Generally, frequencies were estimated in this study. However, the chi-squared test was used for testing relationships between the prevalence of suicide attempts and age and ethnicity. We used SPSS, version 21, for the analysis.

Results

Demographic and other characteristics

The age of the attempters ranged between 13 and 77 years, average 28.7 years, with 59.6% in the 16–30 years age group. Females were more likely to be in the 16–30 years age group ($P = 0.028$), while Emirati nationals were more likely to be in the 31–65 years age group ($P = 0.02$). Females comprised 59.6% of the attempters, with a female to male ratio of 1.5:1.

We found that 34.6% of the attempters were Emirati nationals, 26.6% were Arab non-nationals and 25.3% were from the Indian subcontinent (Table 1). Religion was also noted: 76.1% of the attempters were Muslim and 5.5% were Christian.

There was no information on profession for around 20% of the attempters, however students were strongly represented (Table 1), and, as expected, these students belonged to the 16–30 years age group.

Single people comprised 43.4% of the attempters, whereas 44.8% were married (Table 1). No attempters were recorded as being in polygamous marriages.

As mentioned above, 80% of the Abu Dhabi population consists of non-nationals. Newly arrived migrants are always suspected to be under extra stress. It is, therefore, expected that they should be at higher risk of attempting suicide; however, our study showed that only around 12% of the suicide attempters were resident in the country for less than 6 months (Table 1), which might not support that hypothesis.

Number of attempts

The total number of attempts recorded over the 4 years of the study was 364. They were approximately evenly distributed over the 4 years, with an average annual incidence of 6 per 100 000 population. There were no significant variations that can be correlated with the month or season of the year.

As the incidence of attempting suicide is generally estimated as 10–20 times the incidence of completed suicide (9,10), the annual incidence of completed suicide

Table 1 Demographics characteristics of suicide attempters ($n = 364$) in Abu Dhabi, 2011–2014

Characteristic	No.	%	% of population
Ethnicity			
National	126	34.6	20
Non-national Arab	97	26.6	15
Indian subcontinent	92	25.3	47
Asian	15	4.1	10
African	24	6.6	2
Western	9	2.5	5
Other	1	0.3	3
Religion			
Muslim	277	76.1	NA
Christian	20	5.5	NA
Other	67	12.4	NA
Education			
Illiterate	6	1.6	
1st to 8th grade	46	12.6	
9th to 12th grade	100	27.5	
Higher	90	24.7	
No information	122	33.5	
Profession			
No information	74	20.3	
Student	69	19.0	
Professional	61	16.8	
Labourer	58	15.9	
Unemployed	52	14.3	
Domestic helper	36	9.9	
Housewife	9	2.5	
Other	5	1.4	
Marital status			
Married	179	44.8	
Single	158	43.4	
Divorced	21	5.8	
Widowed	6	1.6	
Length of stay in Abu Dhabi (months)			
0–1	15	4.1	
2–6	29	8.0	
> 6	220	60.4	
NA	100	27.5	

NA = data not available.

(using our figures) can be estimated to be 0.3 per 100 000 population.

Psychiatric diagnosis

We used the ICD-10 criteria for the diagnosis (8): 40.6% of the attempters were diagnosed as having either acute stress reaction or adjustment disorder (Table 2), which highlights the strong relationship between stress and

Table 2 Psychiatric diagnosis among suicide attempters (n = 364) in Abu Dhabi, 2011–2014

Psychiatric diagnosis ^a	No.	%
Adjustment disorder	78	21.4
Acute reaction to stress	70	19.2
Depression	65	17.9
Substance misuse	36	9.9
Accidental overdose	27	7.7
Psychosis	23	6.3
Mania/bipolar affective disorder	14	3.8
Schizophrenia	6	1.6
Other	38	10.4
No information	6	1.6

^aDiagnosis according to the International Statistical Classification of Diseases (8).

attempting suicide. Depression was diagnosed in 17.9%. Only 9.9% had history of drug abuse.

Suicide attempt and method used

Overdosing was the method employed by 50.6% of the attempters, with 32.7% having overdosed on paracetamol (Table 3), a method that was more likely among females ($P = 0.021$). Attempters who overdosed on paracetamol were more likely to be aged 16–30 years ($P = 0.002$). Other commonly used methods were: overdose of other prescribed drugs (17.9%), overdose of recreational drugs (13.2%) and ingestion of chemicals (11.3%). Chemical ingestion, especially the ingestion of cleaning materials, was more likely to be used by Asians ($P = 0.002$). Jumping from a height as a suicide method was more likely to be used by attempters in the 31–65 years age group ($P = 0.008$). Overdosing on recreational drugs was more likely to be used by United Arab Emirates nationals ($P = 0.008$).

Leaving a suicide note was found in only 3.3% of cases, which may be an indicator that the attempt was not quite so serious. All forms of suicide notes were inquired about, including electronic ones (social media, WhatsApp, etc.).

We checked whether the attempt resolved the issue that had precipitated it. Although this was difficult, from the medical notes, we believe that there was a resolution of the precipitating factor (conflict) in 40.9% of the attempts while there was no resolution in 11.3%. Unfortunately, in 47.8% of the attempts, we were unable to identify a clear conflict or any precipitating factor, and were unable to check whether either were resolved or not.

We found there had been no previous attempts in 80.5% of cases; 13.5% had had one previous attempt and 2.2% had had multiple attempts. This, as mentioned above, might be in keeping with the fact that a significant proportion of the attempters had stress-related psychiatric diagnoses (Table 2).

Discussion

Our study provides a good overview of suicide attempters in greater Abu Dhabi, with, however, a major limitation:

not including the suicide attempts of those who were discharged directly from the emergency rooms. Nevertheless, in a way, this meant that our study concentrated on the medically/surgically serious attempts. This is one of the explanations for finding a relatively lower incidence for attempted suicide in our study compared with studies from other countries. For example, the annual incidence of attempting suicide in Ireland is 199 per 100 000 whereas we found it to be 6 per 100 000 (11).

We also noted a significant difference in the estimated annual rate for completed suicide in our study (2–3 per million) when compared with studies in Dubai, which ranged from 5.8 to 6.2 per 100 000 (5,6). This difference may be partially due to the limitation mentioned above; however, it is more likely to be related to the fact that most completed suicides (in the Dubai studies) were carried out by non-nationals of mostly Indian origin and in our study Indians constituted only 25% of the attempters. This suggests that non-nationals, especially Indians, are likely to die from suicide before coming to the attention of the medical services. Furthermore, nationals are less likely to be given a verdict of suicide for cultural/religious reasons. Most of the attempters were Muslim, but no comparisons can be drawn as no data on the religious breakdown of the population is available to compare with our data.

Another interesting finding was the female to male ratio for attempting suicide of 1.5:1. The ratio of males to females in the general population is 2.5:1, indicating that the likelihood of attempting suicide is nearly 4 greater among females than among males in our population. This finding is in line with Saudi Arabian studies on the pattern of drug overdose (intentional and nonintentional) which showed that females were more likely to attempt suicide (12,13), with a ratio reaching 4:1 in one of the studies (12). This is also in keeping with the statistics on attempted suicide from other countries, where it has been established to be higher in females (14). Conversely, studies on completed suicide in Dubai (5,6) showed much higher number of suicides in males, with a ratio of 4:1. The question remains whether men are less likely to reach the attention of the medical services before dying from suicide.

Table 3 Method used among suicide attempters (n = 364) in Abu Dhabi, 2011–2014

Suicide method	No.	%
Paracetamol overdose	119	32.7
Overdose of other prescribed medication	65	17.9
Recreational drug overdose	48	13.2
Chemical ingestion	41	11.3
Violent method (stabbing, burning, hanging)	35	9.6
Jumping from height	22	6.0
Wrist cutting	11	3.0
Other	22	6.0

We found that the number of people attempting suicide seems to be greater among those who had better education compared with those who had less education, which might suggest that the latter group may have had poorer access to medical services.

The average age of 28.7 years in our study matches the findings in other studies (14). Suicide seems to be high in this age group worldwide; it is the second leading cause of death in the United States of America in the age group 15–34 years (15). A study on completed suicide in Dubai showed similar higher numbers for completed suicide in the under 30 years age group (5), but a later study showed less clear results on this (6). We found that the Emirati nationals in our study were more likely to be in an older age group, possibly due to the fact that they are the stable population: other nationalities have a higher turnover and tend to repatriate and leave the country at a relatively younger age.

Rates were nearly equal for married and single suicide attempters; divorced and widowed attempters were minorities in our study, although we could not draw firm conclusions from the numbers due to lack of information on marital status in the general population. From previous research, we would have expected the number of married attempters to be lower (16,17). Polygamy was suggested to be a risk factor for overdosing in a Saudi study (12) but none of the people included in our study were in a polygamous marriage.

The incidence of leaving a suicide note in our study was quite low, but this was nearly the same as that in a study done on completed suicide in Dubai (5). It was also in keeping with a study done in London, which, over the course of 5 years, found that only 15% of suicide attempters had left a note. Moreover, the researchers gained no extra insight from reviewing the content of the notes (18).

Comparison between our study and other published studies is limited due to not including emergency room suicide attempters, as mentioned above; however, one study looked only at serious suicide attempts and we can compare its results with ours. That study showed a similar proportion of attempts using self-poisoning (78%) to our own finding of 70% in total (counting prescribed medication, paracetamol, chemical ingestion, and recreational drugs) (19). The population in that study had a similar mean age to our study, 30 years, but had a male to female ratio of nearly 1:1.

The other issue that we need to highlight is the method used for suicide. A recent large meta-analysis

clearly showed strong evidence of significant suicide prevention when restricting the lethal means (20). This evidence was particularly clear for the restrictions on analgesics. The WHO report on the prevention of suicide also places great emphasis on restricting access to the method of suicide (1). Our study has shown that the use of analgesics, especially paracetamol, in overdosing was the most common method in serious suicide attempts. Our results are similar to the 2 Saudi Arabian studies on overdosing, which showed that NSAIDs were over-represented, with one of the studies showing paracetamol to constitute 30% of the drugs used (12,13).

Limiting our population of suicide attempters to admitted patients only, we accept that it will be difficult to base any policy change, such as the restriction of analgesics, on the conclusions of this study. However, the study on completed suicide in Dubai found self-poisoning to be one of the most likely methods to be used, especially females (5). Similarly, an Iranian study on adolescents has shown that overdosing was the main mean of suicide, which would further suggest the benefit of such restriction measures (21). Furthermore, we believe there is a case for devising and implementing an educational programme in schools, targeting females particularly, as evidence also confirms the benefits of such a prevention method (20).

Treatment of affective disorders may be beneficial in our population as there is a clear evidence for prevention of suicide by treating depression, especially reflecting on the significant proportion of the attempters in our study with a diagnosis of depression (20). Having said that, the biggest share of suicide attempters had stress-related disorders. Two Indian studies showed similar findings, with adjustment disorder being the number one psychiatric diagnosis in patients who attempted suicide (22,23). This differs from a Scandinavian cohort study, which showed severe psychiatric disorders to be the most likely diagnosis that led to completed suicide (24). This poses the question of whether the effect of the diagnosis on the risk of suicide is a universal phenomenon or a culturally bound risk factor. Furthermore, it emphasizes the importance of the relationship between stress and suicide and may again put further emphasis on the restriction of the means of suicide and on education rather than the treatment approach to prevention.

Funding: Funding was provided from Sheikh Khalifa Medical City.

Competing interests: None declared.

Enquête de quatre ans sur les personnes ayant fait des tentatives de suicide médicalement graves à Abu Dhabi

Résumé

Contexte : Il est un fait bien établi que toute tentative de suicide antérieure augmente considérablement le risque pour une personne de réitérer cet acte. Ce risque est considéré comme particulièrement élevé au cours de la première année suivant la tentative. Les informations épidémiologiques sur le suicide sont rares au Moyen-Orient et dans les pays du Conseil de Coopération du Golfe. Il est nécessaire d'établir un point de référence pour mesurer les changements futurs.

Objectifs : Nous avons examiné l'épidémiologie des personnes ayant tenté de se suicider qui nécessitaient des soins hospitaliers à Abu Dhabi afin d'identifier les facteurs associés qui pourraient être utiles aux stratégies locales en matière de prévention du suicide.

Méthodes : La présente étude de quatre ans (2011-2014) menée dans la ville d'Abu Dhabi a couvert l'ensemble des personnes ayant tenté de se suicider, évaluées par l'équipe de liaison pour la consultation et admises dans les trois principaux hôpitaux généraux publics.

Résultats : Nous avons identifié 364 tentatives de suicide correspondant à une incidence annuelle de six pour 100 000 habitants. L'âge moyen était de 28,7 ans. Les femmes représentaient 59,6 % des personnes ayant fait une tentative de suicide et étaient davantage susceptibles d'avoir moins de 30 ans. Environ 40 % des diagnostics psychiatriques chez ces dernières étaient liés au stress et 17,9 % à la dépression. Le surdosage a été la méthode choisie chez 50,6 % des personnes qui ont fait une tentative de suicide, avec 32,7 % d'overdose de paracétamol, les femmes étant plus susceptibles d'utiliser cette méthode. Un peu plus de 13 % des personnes ayant fait une tentative de suicide étaient récidivistes et 2,2 % étaient multirécidivistes.

Conclusion : Les femmes de moins de 30 ans étaient plus exposées au risque de tentative de suicide, le paracétamol étant la méthode privilégiée pour le surdosage. Les diagnostics liés au stress étaient prédominants chez les personnes ayant fait une tentative de suicide.

مسح مدته أربع سنوات في أبو ظبي عن الأشخاص الذين شرعوا في الانتحار وتطلبوا رعاية طبية نظراً لخطورة حالتهم

طارق شحرور، معز صديق، سونة موهان، خديجة الحماسي، توفيق السعدي

الخلاصة:

الخلفية: من المعروف جيداً أن محاولة الانتحار تزيد بشكل كبير من خطر إقدام الشخص على إتمام الانتحار. ويرتفع الخطر على وجه الخصوص خلال العام الأول التالي على المحاولة الأولى. وتندر المعلومات الوبائية عن الانتحار في الشرق الأوسط وبلدان منطقة مجلس التعاون الخليجي، وهناك حاجة إلى وضع نقطة مرجعية لقياس ما قد يطرأ من تغيرات في المستقبل.

الأهداف: هدفت هذه الدراسة إلى فحص الخصائص الوبائية لأصحاب محاولات الانتحار التي تتطلب حالتهم رعاية طبية في المستشفيات في أبو ظبي لتحديد العوامل المصاحبة التي يمكن أن تساعد الاستراتيجيات المحلية للوقاية من الانتحار.

طرق البحث: شملت هذه الدراسة التي أجريت حول الأشخاص الذين حاولوا الانتحار في مدينة أبو ظبي واستمرت 4 سنوات (2011-2014) جميع الحالات التي خضعت لتقييم فريق التشاور والاتصال ودخلت أي من المستشفيات العامة الحكومية الرئيسية الثلاثة.

النتائج: حددنا 364 محاولة انتحار بمعدل حدوث سنوي يصل إلى 6 محاولات لكل 100000 نسمة. وكان متوسط العمر 28.7 عاماً. وتُشكل الإناث 59.6٪ من هذه المحاولات، وكان من المرجح أن تكون أعمارهن أقل من 30 عاماً. وارتبط حوالي 40٪ و 17.9٪ من التشخيصات النفسية للذين يحاولون الانتحار بالتوتر والاكتئاب، على التوالي. ويلجأ 50.6٪ من الذين يحاولون الانتحار إلى تناول جرعة زائدة من الأدوية، بنسبة 32.7٪ من الباراسيتامول بجرعة زائدة، وكانت احتمالات استخدام هذه الطريقة أعلى في الإناث. وتصل نسبة الأشخاص الذين لديهم محاولة سابقة للانتحار إلى 13٪، بينما تصل نسبة الذين حاولوا الانتحار أكثر من مرة إلى حوالي 2.2٪.

الاستنتاجات: تُعتبر الإناث الأصغر من 30 عاماً أكثر عُرضة لخطر محاولة الانتحار عن طريق تناول جرعة زائدة من الباراسيتامول، بوصفها الطريقة المفضلة لديهم. وقد سادت التشخيصات المرتبطة بالتوتر بين الأشخاص الذين حاولوا الانتحار.

References

1. Preventing suicide: a global imperative. Geneva: World Health Organization; 2014.
2. Owens D, Horrocks J, House A. Fatal and non-fatal repetition of self-harm. Systematic review. *Brit J Psychiatry*. 2002;181(3):193–99. doi:10.1192/bjp.181.3.193
3. Suleiman MA, Moussa MA, el-Islam MF. The profile of para suicide repeaters in Kuwait. *Int J Soc psychiatry*. 1989 summer;35(2):146–55. doi:10.1177/002076408903500202
4. Hawton K, Bergen H, Cooper J, Turnbull P, Waters K, Ness J, et al. Suicide following self-harm: findings from the multicenter study of self-harm in England, 2000–2012. *J Affect Disord*. 2015;175:147–51. doi:10.1016/j.jad.2014.12.062
5. Koronfel, A. A.. Suicide in Dubai, United Arab Emirates. *J Clin Forensic Med*. 2002;9(1):5–11. doi:10.1054/jcfm.2002.0514
6. Dervic K, Amiri L, Niederkrotenthaler T, Yousef S, Salem M, Voracek M, et al. Suicide rates in the national and expatriate population in Dubai, United Arab Emirates. *Int J Soc Psychiatry*. 2012 Nov;58(6):652–6. doi:10.1177/0020764011430038
7. Statistical yearbook of Abu Dhabi 2012. Abu Dhabi: Statistics Center; 2014.
8. International Statistical Classification of Diseases, 10th rev (ICD-10). Geneva: World Health Organization; 1994.
9. Figures and facts about suicide. Geneva: World Health Organization; 1999 <https://apps.who.int/iris/handle/10665/66097>, accessed 5 July 2020).
10. Persett PS, Grimholt TK, Ekeberg O, Jacobsen D, Myhren H. Patients admitted to hospital after suicide attempt with violent methods compared to patients with deliberate self-poisoning -a study of background variables, somatic and psychiatric health and suicidal behavior. *BMC Psychiatry*. 2018;24:18(1):21. doi:10.1186/s12888-018-1602-5
11. Griffin E, Arensman E, Corcoran P, Wall A, Williamson E, Perry I. National self-harm registry ireland annual report 2014. Cork, Ireland: National Suicide Research Foundation. 2015.
12. Al-Jahdali H, Al-Johani A, Al-Hakawi A, Arabi Y, Ahmed QA, Altowirky J, et al. Pattern and risk factors for intentional drug overdose in Saudi Arabia. *Can J Psychiatry*. 2004;49(5):331–4. doi:10.1177/070674370404900509
13. Bakhaidar M, Jan S, Farahat F, Alsaywid B, Abuznadah W. Pattern of drug overdose and chemical poisoning among patients attending an emergency department, Western Saudi Arabia. *J Community Health*. 2015;40(1):57–61. doi:10.1007/s10900-014-9895-x
14. Corcoran P, Keeley HS, O'Sullivan M, Perry IJ. The incidence and repetition of attempted suicide. *Eur J Public Health*. Mar 2004;14(1):19–23. doi:10.1093/eurpub/14.1.19
15. Web-based injury statistics query and reporting system (WISQARS). Atlanta: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2013.
16. Kim JW, Jung HY, Won DY, Noh JH, Shin YS, Kang TI. suicide trends according to age, gender, and marital status in South Korea. *Omega (Westport)*. 2019 May;79(1):90–105. doi:10.1177/0030222817715756
17. Griffiths C, Ladv G, Brock A, Baker A. Trends in suicide by marital status in England and Wales, 1982–2005. *Health Stat Q*. 2008;(37):8–14. PMID:18351023
18. O'Donnell I, Farmer R, Catalan J. Suicide notes. *Br J Psychiatry*. 1993;163:45–8. doi:10.1192/bjp.163.1.45
19. Beautrais AL. Subsequent mortality in medically serious attempts: a 5 year follow up. *Aust NZ J Psychiatry*. 2003 Oct;37(5):595–9. doi:10.1046/j.1440-1614.2003.01236.x
20. Zalsman G, Hawton K, Wasserman D, van Heeringen K, Arensman E, Sarchiapone M, et al. Suicide prevention strategies revisited: 10-year systematic review. *Lancet Psychiatry*. 2016;3(7):646–59. doi:10.1016/S2215-0366(16)30030-X
21. Mokhatari AM, Salari A, Hassanipour S, Mirahmadizadeh A. Epidemiology of suicide in 10–19 years old in southern Iran, 2011–2016: a population-based study on 6720 cases. *J Forensic Leg Med*. 2019 Aug; 66:129–133. doi:10.1016/j.jflm.2019. 06.018.
22. Galgali.R.B, Sanjeev Rao, Ashok.M.V, Appaya.P and Srinivasan.K, Psychiatric diagnosis of self poisoning cases a general hospital study. *Indian J Psychiatry*. 1998;40(3):254–9. PMID:21494481
23. Baby S, Haridas M, Yesudas KF. Psychiatric diagnosis in attempted suicide. *Calicut Med J*. 2006;4(3):e2.
24. Tidemalm D, Långström N, Lichtenstein P, Runeson B. Risk of suicide after suicide attempt according to coexisting psychiatric disorder: Swedish cohort study with long-term follow-up. *BMJ*. 2008;337:a2205. doi:10.1136/bmj.a2205

Views of primary health care providers of the challenges to screening for intimate partner violence, Egypt

Eman Ibrahim,¹ Nashwa Hamed¹ and Lamia Ahmed¹

¹Department of Public Health, Faculty of Medicine, Fayoum University, Fayoum, Egypt. (Correspondence to: Eman Ibrahim: emanhanafy2009@yahoo.com).

Abstract

Background: Health care providers can play an important role in detection of intimate partner violence within health services but barriers exist.

Aims: This study aimed to determine the barriers that health care providers in Fayoum, Egypt, consider prevent them from screening for intimate partner violence.

Methods: This was a cross-sectional study between June 2018 and January 2019. The sample was health care providers (doctors, nurses, social workers and community workers) selected from government primary care centres in all seven districts of Fayoum. A validated Arabic version of the Domestic Violence Health Care Provider Survey was used to collect data.

Results: A total of 385 health care providers (92.7% women) agreed to participate (78.6% response rate). Just over half of the participants did not have access to social workers or community workers or strategies to help victims of intimate partner violence. None had received training on screening for domestic violence. More than half (59.7%) thought that investigating the cause of intimate partner violence was not part of medical practice. Sex was significantly associated with perceived self-efficacy, while age and occupation were significantly associated with referral management and health providers' attitude.

Conclusion: Primary health care providers perceived many barriers to screening for intimate partner violence. Training on screening for and managing intimate partner violence should be part of the professional development for all health care providers. An effective referral system is needed that ensures comprehensive services for victims.

Keywords: intimate partner violence, screening, health personnel, primary health care, Egypt

Citation: Ibrahim E; Hamed N; Ahmed L. Views of primary health care providers of the challenges to screening for intimate partner violence, Egypt. *East Mediterr Health J.* 2021;27(3):233-241. <https://doi.org/10.26719/emhj.20.125>

Received: 19/11/19; accepted: 04/03/20

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo/>).

Introduction

Intimate partner violence is any behaviour by an intimate partner or ex-partner that causes physical, sexual or psychological harm (1,2). Intimate partner violence is an important public health problem. The World Health Organization (WHO) estimates that 35% of women have suffered either physical and/or sexual intimate partner violence or non-partner sexual violence in their lifetime (1,2).

While the rates of intimate partner violence differ in low-, middle-, and high-income regions, the health effects are similar across the world (1). In all countries, women facing intimate partner violence often present in health settings and require a wide range of medical services (3) to manage health problems, not only for the women but also for their children (1). Women who experience intimate partner violence tend to use more health care services (4) and are likely to disclose abuse for the first time to a health care provider (5). Therefore, health care providers can play an important role in detection of intimate partner violence within health services if they ask women about intimate partner violence (6).

Screening for intimate partner violence within health care services is an opportunity to provide victims with

information about and referral to support services (6,7) as well as to discuss with them ways to cope (6–8). Health professionals are increasingly required to undertake screening for health issues including intimate partner violence in accordance with national health policies and published guidelines (8,9).

Efforts of primary health care providers to screen women experiencing intimate partner violence may be undermined by various barriers; for example, not feeling confident about screening, not knowing what questions to ask or how to respond if a woman reports being abused, and feeling there is not enough time to screen (7). Barriers can also come from women who may not trust the provider enough to disclose this sensitive information. This lack of trust may be due to health care providers' attitude to and misconceptions about intimate partner violence (7–10).

In Egypt, intimate partner violence is estimated to affect 26–30% of ever-married women (11). Violence against women is considered socially acceptable to some extent, even by women, as about a third of ever-married women aged 15–49 years agree that wife beating is justified in certain circumstances (11,12). The absence of policies and the discriminatory Egyptian personal

status – where men (father, brother or husband) have some power over women – prevent many women from reporting or proving the harm they experience which suggests the need for health care providers to screen for the intimate partner violence (12).

Our study aimed to: (i) determine the barriers to screening for intimate partner violence as perceived by health care providers in primary health care centres in Fayoum governorate, Egypt and (ii) assess the association between health care providers' characteristics and barriers to screening for intimate partner violence.

Methods

Study design and setting

We conducted a cross-sectional descriptive study in Fayoum Governorate, south-west of Cairo, which has an area of 1827 km² and a population of 3 362 413 million (13). We conducted the survey over a period of 6 months between June 2018 and January 2019. The study population was from primary health care facilities run by the health ministry in Fayoum Governorate. Fayoum Governorate is divided into seven districts, all of which have urban and rural areas: Bander El-Fayoum, Markaz El-Fayoum, Etsa, Senwres, Yuosif Elsedek, Ebshway and Tamyia districts.

Study participants and sampling

From each district, we randomly selected four primary health care facilities (a total of 28 centres), from which we selected 70 health personnel from each district to reach a sample size of 490. The participants included doctors, nurses, social workers and community navigators (women from the catchment areas of the primary health care facilities employed by the health ministry to reach out to women residents for health education and vaccination and to carry out ministry of health surveys) from the selected primary health care facilities. The inclusion criteria were: working full time for more than 1 month, being in direct contact with patients and agreeing to participate. Participants who did not meet these criteria were excluded.

Sample size was calculated according to district population using *Epi Info*, 2000, based on the following assumptions: 5% precision and 95% confidence interval; this gave a sample of 408. We increased the sample by 20% to overcome non-response to give a total sample size of 490 people. We used a purposive sampling method whereby 70 people were selected from the selected primary health care centres in each district to reach a sample of 490 participants. The final sample was 385 because 105 people declined to participate (78.6% response rate).

Study tool and data collection

We used a validated questionnaire for data collection which was done over a period of 5 months. We collected data through face-to-face interviews at the primary health care centres. We used an Arabic version of the Domestic Violence Health Care Provider Survey Scale to as-

sess the willingness of health care providers to screen for intimate partner violence as well as their actual screening activity (14). The questionnaire consisted of two sections. The first section covered the sociodemographic characteristics of the participants, including age, sex, occupation, previous training in screening for intimate partner violence and years of experience. The second section covered five aspects; perceived self-efficacy (time constraints, strategies for enquiry, access to information and confidence for enquiring about intimate partner violence) (4 items); support/referral management (4 items); conflict with ethical issues (whether providers perceive that enquiries about intimate partner violence conflict with ethical issues/rules governing their communication with clients) (6 items); attitudes of health care provider to victims (7 items); and victim/provider safety (whether providers perceive that asking the perpetrators about intimate partner violence jeopardizes the safety of victims and care provider) (10 items). A five-point Likert scale was used for each statement which ranged from 1 (strongly disagree) to 5 (strongly agree). Some of the statements are phrased in such a way that their scores need to be reversed to match with other items in the same scale. The questionnaire was developed in English which we translated into Arabic through a process of forward and backward translation with professional translators fluent in both languages. Furthermore, we tested the Arabic version on a pilot sample of 60 health care providers (12% of the target sample) for clarity and suitability of questions, and some modifications were made. The participants of the pilot sample were not included in the final sample.

Validity and reliability of the Arabic version

The face and content validity of the translated Arabic version of the Domestic Violence Health Care Provider Survey Scale was determined in a pilot sample of 60 participants (the sample was increased from 10% to 12%, to decrease the response bias) and by five experts (statisticians). A 4-point Likert scale was used for content validity with: 1 = not relevant, 2 = somewhat relevant, 3 = relevant and 4 = very relevant. We considered ratings of 1 and 2 to indicate that the content was not valid and ratings of 3 and 4 that the content was valid. We used a 3-point Likert scale to assess clarity and essentiality. The clarity scale was: 1 = not clear, 2 = needs revision and 3 = clear. For essentiality, the scale was: 1 = not essential, 2 = somewhat essential and 3 = essential. We calculated the content validity ratio using a Lawshe sheet with the formula $(N_e - N/2)/(N/2)$, where N_e is the number of experts indicating an item as essential and N is the total number of experts. We considered a content validity ratio ≥ 0.62 to be good. We calculated the content validity index by adding all items with a content validity index equal to 1 and dividing by the total number of items. We considered a content validity index > 0.80 to be acceptable. For items with loadings of 0.30 and above, we carried out a reliability test. As a result we dropped four items of the total 35.

We tested significant factors > 0.30 for internal consistency using the Cronbach alpha. We did further

investigations to identify whether removal of the four items would improve the alpha coefficient or not and retested for reliability. We then re-examined the questions in a new factor analysis after removal of the four items until all remaining items loaded at least 0.30. We considered intraclass correlation coefficient values > 0.75 to be excellent. We chose a Cronbach alpha ≥ 0.70 to be significant. We ran bivariate correlations to investigate the factor distinctiveness of the final factor solution. We considered a total correlation of an item ≥ 0.4 to be acceptable.

The intraclass correlation coefficients for the following subscales were: 0.77 for the seven items of providers' attitudes to victims; 0.73 for the 10 items of victim/provider safety; and 0.74 for the four items of system support/referral management. The intraclass correlation of the six items of the conflict with ethical issues subscale was 0.76. However, removal of two of these items increased the Cronbach alpha to 0.78. Finally, the intraclass correlation coefficient of the four items of the perceived self-efficacy subscale was 0.77. Removal of two items from this scale decreased the intraclass correlation coefficient.

Data analysis

We used SPSS, version 21 for statistical analysis. We calculated the mean and standard deviation (SD) for quantitative variables and used the independent t-test or one-way ANOVA to test significance; we considered $P \leq 0.05$ to be statistically significant. We analysed categorical data by computing percentages. We did a logistic regression analysis to test for risk factors associated with intimate partner violence barriers, presented as odds ratios (ORs) and 95% confidence intervals (CI).

Ethical considerations

This study was approved by the Research Ethical Committee of the Faculty of Medicine, Fayoum University (Session 65 on 13 October 2019; register number R103, retrospectively registered). We obtained ethical approval and permission from the directors of the primary health care facilities to allow and facilitate data collection in their hospitals. We obtained informed verbal consent from the participants to participate in the study. We provided the participants with detailed information on their right to confidentiality and protection of their identities, the background and objectives of the study, the interview time and the voluntary nature of participation. The Research Ethical Committee of Faculty of Medicine, Fayoum University approved the use of verbal consent.

Results

Of the 385 health care providers participating in the study, 92.7% were women and 55.6% were nurses (Table 1). The greatest proportion (33.8%) were in the age group 36–45 years followed by 26–35 years (29.1%). Most of the participants (57.6%) had been working in their jobs for 11–15 years (Table 1). None of the participants had ever received training on screening for domestic violence.

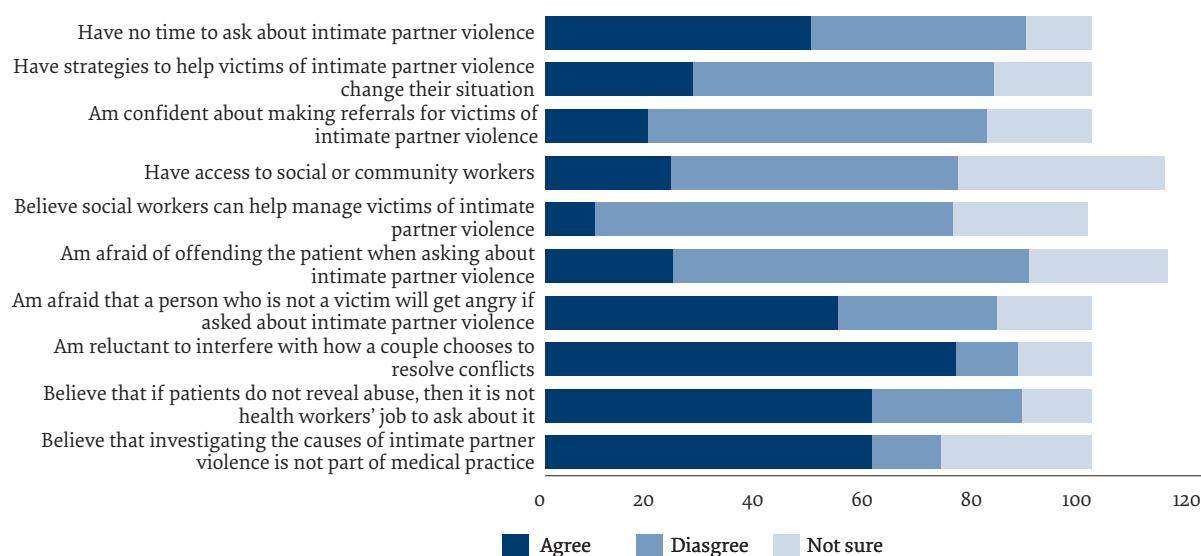
Almost half of the participants (48.0%; 185/385) said that they did not have enough time to ask about intimate partner violence, while 62.1% were not confident about making referrals for abused patients and 65.4% believed that social workers are not able to help patients experiencing intimate partner violence – because they lack guidelines or training to do this – (Figure 1). More than half of the participants had neither access to medical social workers or community advocates (53.5%; 206/385) nor strategies to help victims of intimate partner violence change their situation (55.1%). They were also afraid that if they screened for intimate partner violence, patients who were not victims would get angry (53.5% of participants). Most participants (75.1%) did not want to interfere with how a couple chooses to resolve conflicts and 59.7% believed that investigating the cause of intimate partner violence was not part of medical practice (Figure 1).

Table 2 shows the association between participants' characteristics and aspects of intimate partner violence. Mean perceived self-efficacy score was significantly associated with three characteristics of the participants: age ($P = 0.029$), sex ($P = 0.037$) and occupation ($P = 0.024$). Mean referral management score was also significantly associated with age ($P = 0.001$), while ethical issues was associated with years working in their job ($P = 0.033$). The attitude of health care providers to intimate partner violence was significantly associated with occupation ($P = 0.024$).

In the logistic regression analysis (Table 3), female sex was significantly associated with perceived self-efficacy

Table 1 Characteristics of the study participants

Characteristic	No. (n = 385)	%
Age (years)		
< 25	32	8.3
26–35	112	29.1
36–45	130	33.8
46–55	79	20.5
> 55	32	8.3
Sex		
Male	28	7.3
Female	357	92.7
Job description		
Specialist	22	5.7
Family physician	31	8
Resident	55	14.3
Nurse	214	55.6
Social worker	63	16.4
Years in job		
1–5	56	14.5
6–10	28	7.3
11–15	79	20.5
> 15	222	57.6

Figure 1 Distribution of participants according to attitude and barriers to screening for intimate partner violence

(OR = 1.612; 95% CI: 1.072–2.424). In addition, being a social worker was significantly associated with health provider attitude (OR = 0.849; 95% CI: 0.758–0.950).

Discussion

According to WHO, a high prevalence of mental problems, negative health outcomes and suicidal attempts

have been detected among those who have experienced intimate partner violence, which make it a serious public health problem that needs to be addressed (15). Reducing or eliminating intimate partner violence requires a deep understanding of cultural norms as well as the challenges that many health care providers face when dealing with this issue among their patients. Hence, our study

Table 2 Association between participants' characteristics and intimate partner violence parameters (n = 385)

Characteristic	Self-efficacy		Referral management		Ethical issues		Provider attitude		Victim/provider safety	
	Mean (SD)	P-value	Mean (SD)	P-value	Mean (SD)	P-value	Mean (SD)	P-value	Mean (SD)	P-value
Age (years)										
< 25	2.00 (1.08)	0.029	5.38 (1.95)	0.001	4.13 (1.88)	0.152	9.03 (2.31)	0.507	3.31 (1.62)	0.301
26–35	2.38 (0.89)		5.73 (2.28)		4.30 (1.38)		9.19 (2.38)		3.94 (1.35)	
36–45	2.55 (0.92)		5.36 (2.39)		4.64 (1.29)		9.13 (2.62)		3.92 (1.52)	
46–55	2.62 (1.16)		6.90 (3.24)		4.32 (1.71)		9.54 (3.27)		3.96 (1.74)	
> 55	2.34 (1.21)		6.31 (3.04)		4.75 (1.41)		9.91 (2.69)		3.81 (1.55)	
Sex										
Male	2.07 (1.18)	0.037	6.07 (2.49)	0.667	4.43 (1.20)	0.962	9.21 (2.25)	0.880	3.46 (1.10)	0.144
Female	2.48 (0.99)		5.85 (2.65)		4.44 (1.50)		9.29 (2.71)		3.90 (1.56)	
Occupation										
Specialist	2.41 (1.18)	0.024	7.14 (2.71)	0.177	4.32 (1.67)	0.107	9.00 (2.78)	0.024	3.91 (1.19)	0.345
Family physician	2.46 (1.25)		6.04 (3.38)		4.00 (0.83)		8.58 (2.47)		3.38 (1.66)	
Resident	2.38 (0.76)		5.71 (1.99)		4.45 (1.41)		9.29 (2.65)		3.98 (1.46)	
Nurse	2.50 (1.02)		5.89 (2.64)		4.42 (1.55)		9.07 (2.72)		3.88 (1.59)	
Social worker	2.52 (0.93)		5.38 (2.81)		4.83 (1.39)		10.32 (2.51)		4.02 (1.52)	
Years in job										
1–5	2.30 (0.87)	0.201	5.62 (2.13)	0.160	4.64 (1.27)	0.033	9.34 (2.47)	0.867	4.20 (1.48)	0.078
6–10	2.18 (0.77)		5.36 (2.97)		3.61 (1.66)		8.86 (2.74)		3.18 (1.22)	
11–15	2.39 (1.09)		5.47 (2.37)		4.47 (1.59)		9.32 (2.71)		3.82 (1.69)	
> 15	2.55 (1.04)		6.11 (2.78)		4.48 (1.44)		9.33 (2.73)		3.90 (1.51)	

SD = standard deviation.

Table 3 Multivariable logistic regression analysis of factors associated with screening for intimate partner violence

Factors associated with:	B	P-value	OR (95% CI)
Self-efficacy			
Age (> 35 years)	0.093	0.451	1.10 (0.86–1.40)
Sex (female)	0.477	0.022	1.61 (1.07–2.42)
Occupation (social worker)	–0.136	0.417	0.87 (0.63–1.21)
Years in job (> 15)	–0.152	0.186	0.86 (0.69–1.08)
Referral management			
Age (> 35 years)			
	0.021	0.660	1.02 (0.93–1.12)
Sex (female)	–0.134	0.122	0.87 (0.74–1.04)
Job (social worker)	0.104	0.074	1.11 (0.99–1.25)
Years in job (> 15)	–0.070	0.111	0.93 (0.86–1.02)
Ethical issues			
Age (> 35 years)	0.142	0.121	1.15 (0.96–1.38)
Sex (female)	–0.161	0.328	0.85 (0.62–1.18)
Occupation (social worker)	–0.181	0.161	0.83 (0.65–1.03)
Years in job (> 15)	–0.044	0.600	0.96 (0.81–1.13)
Provider's attitude			
Age (> 35 years)	0.007	0.872	1.01 (0.92–1.10)
Sex (female)	0.005	0.945	1.01 (0.86–1.17)
Occupation (social worker)	–0.164	0.004	0.85 (0.76–0.95)
Years in job (> 15)	–0.007	0.868	0.99 (0.92–1.08)
Victim/provider safety			
Age (> 35 years)	–0.133	0.135	0.88 (0.74–1.04)
Sex (female)	0.238	0.129	1.27 (0.93–1.73)
Occupation (social worker)	0.054	0.611	1.06 (0.86–1.30)
Years in job (> 15)	0.042	0.597	1.04 (0.89–1.22)

OR= odds ratio; CI=confidence interval.

attempted to explore these barriers and suggest some effective solutions.

Similar to other studies (16,17), we categorized barriers faced by health care providers in dealing with intimate partner violence into five groups: perceived self-efficacy, perceived system support and referral management, ethical issues, providers' attitudes, and perceived victim-related issues. Our results suggest that ethical issues, perceived victim-related issues and perceived system support and referral management are the most important barriers that could hinder screening for intimate partner violence. Most of our participants chose not to interfere with how couples manage conflicts and thought that non-abused patients might get angry if they are asked about intimate partner violence. This results concurs with a study done in a very similar context in Mounofia, Egypt (18) but conflicts with a Canadian study that found that most participants believed identifying intimate partner violence was very relevant to clinical practice (19). Two main characteristics of Egyptian society, religiosity and conservatism, could be the reasons behind our finding. On the other hand, the fact that none of our participants had had training on screening for intimate partner violence in the past 5 years means they were not well equipped to deal with this issue. Other studies have found that implementing intimate partner violence screening

programmes improves the knowledge, attitudes and self-efficacy of health care providers about intimate partner violence and screening (20–22).

Health care providers' cultural competency could be beneficial in detecting the signs of exposure to intimate partner violence and dealing with victims in a culturally sensitive way. However, insufficient training on, inadequate experience of and absence of support resources for intimate partner violence mean health care providers rely on their cultural beliefs that tend to see domestic violence as an unimportant personal issue. These beliefs could negatively affect their attitude to screening cases of intimate partner violence and their preparedness to do so. This was clearly demonstrated as about three quarters of our participants chose not to interfere with how a couple manages conflict, and two thirds believed that intervening in intimate partner violence was not part of their medical practice.

Our participants' attitudes to victims of intimate partner violence as a barrier to screening for intimate partner violence was significantly associated with their occupation. Social workers and nurses had a more positive attitude to victims, while family physicians had the least favourable attitude. This finding concurs with the findings of another Egyptian study that reported that physicians thought that screening for intimate

partner violence was not important because of its social acceptability in the Middle East (23). A Brazilian study also found that physicians had little sympathy for victimized women (24). Many cultural, gender and religious norms could explain these findings. Within the Arabic culture, women are expected to follow the culture on marital relationships and not disclose intimate partner violence to others, including to health care providers as found in a Saudi study only 6.5% of women who had intimate partner violence related injuries had reported these injuries to a health-care provider (25). Women who choose to report it face several obstacles, including stigma, a lack of interest by the police or the legal system, as well as inadequate criminal laws that explicitly criminalize domestic violence and marital rape. This leads many women who are subjected to domestic violence to suffer in silence.

The other main barriers to screening as reported by more than half of our participants were time constraints and a lack of strategies to handle intimate partner violence. This is consistent with the findings of other studies (18–23,26). On the other hand, an American study found those two barriers were reported by only 9.4% of their participants (27).

The two perceived self-efficacy barriers were significantly associated with age, sex and job of the health care provider. Female providers showed more perceived self-efficacy than males which is in line with a Swedish study that also found that health care providers who perceived a high self-efficacy in screening were more likely to screen for intimate partner violence (28). This association may be due to high representation of women in our study sample and women may show more readiness to screen for intimate partner violence out of sympathy for fellow women. Social workers perceived a higher self-efficacy than other providers which is consistent with studies conducted in Nigeria and Uganda that found Ugandan doctors had lower self-efficacy than other professions and social workers had higher self-efficacy (29,30). This differs from a Lebanese study that found that physicians considered themselves well positioned to manage intimate partner violence (31).

Confidence about referring a victim of intimate partner violence is an important component of the perceived support system, which in turn, is associated with an increased likelihood to screen for intimate partner violence (28–32). In our study, most participants were not confident about making referrals for abused women, which affected their proactivity to try and detect victims of intimate partner violence. A Nigerian study found that health care providers who had a high efficacy in handling intimate partner violence, few fears of offending clients, professional preparedness, and available support networks were more likely to screen for intimate partner violence (29).

Age significantly affected both perceived self-efficacy and system support and referral in our study. This finding agrees with, and may even be explained by a study that found that older primary health care workers were more likely to screen for intimate partner violence (32).

Our study showed that sex was a significant predictor of health care providers' self-efficacy. However, this result may be biased by large numbers of female participants in our study (92.7%) compared with males (3.7%), which could affect the reliability of this finding.

More than half of our participants did not have any access to social workers or community advocates and two thirds claimed social workers were unable to provide help. This finding differs from another Egyptian study where one fifth of participants claimed the unavailability of the necessary referrals to help victims (23).

This is consistent with findings of a study done among Jordanian nurses (26). This unavailability of support resources is problematic and could be correlated with a reluctance of health care providers to intervene or even report cases of intimate partner violence.

As far as we know this is the first study dealing with intimate partner violence in our governorate. We covered all seven districts of Fayoum governorate, even remote areas, and had a response rate of 78.5%. Our study had some limitations. It was carried out in settings run by the health ministry, which serve low-income populations where physicians, nurses and social workers do not receive the training they need to effectively screen for intimate partner violence. Therefore, it may not be possible to generalize our results to other governorates in Egypt or other health care facilities, such as teaching or private facilities which have different organizational structures. Furthermore, the responses were the participants' perceptions about dealing with intimate partner violence (no time, no strategies to help) rather than the actual status if they had to deal a real situation, and the two may differ. Selection bias is another limitation, as the views of those who did not participate in the study may be different from those who were included. In spite of omitting some questions from the original questionnaire (related to provider and victim safety) that we considered might contradict our culture (mainly on sexual violence), some health care providers were reluctant to complete the questionnaire, especially in rural areas. In addition, we could not properly assess barriers to intimate partner violence screening according to sex because of the under-representation of male participants compared to females. Focus group discussion could be a better choice to maximize accuracy and the amount of information collected, but we could not undertake such discussions because the health care providers had limited time.

In view of our findings, training on screening for and managing intimate partner violence should be part of the professional development for all health care providers. Partnership between the health and social affairs ministries, as well as nongovernmental organizations, is recommended to provide cross-training and develop an effective referral system that ensures comprehensive services for victims.

Acknowledgement

We thank the directors of the primary healthcare centres who allowed us to carry out the survey, and the data collectors and participants for their time in completing the questionnaire.

Funding: None.

Competing interests: None declared.

Points de vue des prestataires de soins de santé primaires sur les difficultés du dépistage de la violence entre partenaires intimes (Égypte)

Résumé

Contexte : Les prestataires de soins de santé peuvent jouer un rôle important dans la détection de la violence entre partenaires intimes au sein des services de santé, mais des obstacles existent à cet égard.

Objectifs : La présente étude visait à déterminer les obstacles que les prestataires de soins de santé à Fayoum (Égypte) considèrent comme des entraves au dépistage de la violence entre partenaires intimes.

Méthodes : Il s'agissait d'une étude transversale réalisée entre juin 2018 et janvier 2019. L'échantillon était composé de prestataires de soins de santé (médecins, infirmiers, travailleurs sociaux et agents communautaires) sélectionnés dans les centres de soins primaires gouvernementaux des sept districts de Fayoum. Une version arabe validée de l'enquête auprès des prestataires de soins de santé sur la violence domestique a été utilisée pour collecter les données.

Résultats : Au total, 385 prestataires de soins de santé (92,7 % de femmes) ont accepté de participer (taux de réponse de 78,6 %). Un peu plus de la moitié des participants n'avaient pas accès à des travailleurs sociaux ou à des agents communautaires. De même, ils ne pouvaient pas recourir à des stratégies pour aider les victimes de la violence exercée par un partenaire intime. Aucun n'avait reçu de formation au dépistage de la violence domestique. Plus de la moitié (59,7 %) pensaient que l'enquête sur la cause de la violence exercée par le partenaire intime ne faisait pas partie de la pratique médicale. Il y avait une corrélation importante entre le sexe et l'auto-efficacité perçue, tandis que l'âge et la profession étaient significativement associés à la gestion de l'orientation-recours et à l'attitude des prestataires de santé.

Conclusion : Les prestataires de soins de santé primaires percevaient de nombreux obstacles au dépistage de la violence exercée par un partenaire intime. La formation au dépistage et à la prise en charge de la violence entre partenaires intimes devrait faire partie du développement professionnel de tous les prestataires de soins de santé. Un système efficace d'orientation-recours est nécessaire pour offrir des services complets aux victimes.

آراء مقدمي الرعاية الصحية الأولية بشأن التحديات الماثلة أمام الكشف عن حالات العنف الشريك، مصر

إيمان إبراهيم، نشوى حامد، لمياء أحمد

الخلاصة:

الخلفية: يمكن أن يضطلع مقدمو الرعاية الصحية بدور مهم في الكشف عن حالات العنف الشريك داخل الخدمات الصحية، إلا أن هناك عدة عقبات تحول دون ذلك.

الأهداف: هدفت هذه الدراسة إلى تحديد العقبات التي يرى مقدمو الرعاية الصحية في الفيوم، مصر أنها تعوقهم عن الكشف عن حالات العنف الشريك.

طرق البحث: أُجريت دراسة مستقطعة في الفترة بين يونيو/حزيران 2018 ويناير/كانون الثاني 2019. وشملت عينة من مقدمي الرعاية الصحية (الأطباء، والممرضات، والأخصائيين الاجتماعيين والعاملين بصحة المجتمع) الذين اختيروا من مراكز الرعاية الصحية الأولية الحكومية في جميع مناطق الفيوم السبع. واستُخدمت نسخة عربية مصادق عليها من مسح مقدمي الرعاية الصحية حول العنف العائلي لجمع البيانات.

النتائج: وافق ما مجموعه 385 مقدم رعاية صحية (92.7% من النساء) على المشاركة (بمعدل استجابة 78.6%). ولم يتسن لأكثر من نصف المشاركين الوصول إلى الأخصائيين الاجتماعيين أو العاملين بصحة المجتمع أو استراتيجيات لمساعدة ضحايا العنف الشريك. ولم يتلق أي من المشاركين تدريباً حول كيفية الكشف عن العنف العائلي. ورأى أكثر من نصف المشاركين (59.7%) أن تحري أسباب العنف الشريك ليس جزءاً من الممارسات الطبية. وارتبط نوع الجنس ارتباطاً كبيراً بالكفاءة الذاتية المتصورة، بينما ارتبط العمر والمهنة ارتباطاً كبيراً بإدارة نظام الإحالة وموقف مقدمي الخدمات الصحية.

الاستنتاجات: تصور مقدمو الرعاية الصحية أن هناك العديد من العقبات التي تحول دون الكشف عن حالات العنف الشريك. وينبغي أن يكون التدريب على الكشف عن حالات العنف الشريك وإدارتها جزءاً من التطوير المهني لجميع مقدمي الرعاية الصحية. وهناك حاجة إلى نظام إحالة فعال لضمان توفير خدمات شاملة للضحايا.

References

1. Violence against women. Geneva: World Health Organization; 2016 (<https://www.who.int/news-room/fact-sheets/detail/violence-against-women>, accessed 22 February 2018).
2. Dillon G, Hussain R, Loxton D, Rahman S. Mental and physical health and intimate partner violence against women: a review of the literature. *Int J Family Med.* 2013;2013:313909. <http://doi.org/10.1155/2013/313909>
3. O'Doherty LJ, Taft A, Hegarty K, Ramsay J, Davidson LL, Feder G. Screening women for intimate partner violence in healthcare settings: abridged Cochrane systematic review and meta-analysis. *BMJ.* 2014;348:g2913. <http://doi.org/10.1136/bmj.g2913>
4. Kruse M, Sørensen J, Brønnum-Hansen H, Helweg-Larsen K. The health care costs of violence against women. *J Interpers Violence.* 2011;26(17):3494–508. <http://doi.org/10.1177/0886260511403754>
5. Ansara DL, Hindin MJ. Formal and informal help-seeking associated with women's and men's experiences of intimate partner violence in Canada. *Soc Sci Med.* 2010;70(7):1011–8. <https://doi.org/10.1016/j.socscimed.2009.12.009>
6. Phelan MB. Screening for intimate partner violence in medical settings. *Trauma, Violence Abuse.* 2007;8(2):199–213. <https://doi.org/10.1177/1524838007301221>
7. O'Campo P, Kirst M, Tsamis C, Chambers C, Ahmad F. Implementing successful intimate partner violence screening programs in health care settings: Evidence generated from a realist-informed systematic review. *Soc Sci Med.* 2011;72(6):855–66. <https://doi.org/10.1016/j.socscimed.2010.12.019>
8. Miller E, McCaw B, Humphreys BL, Mitchell C. Integrating intimate partner violence assessment and intervention into health-care in the United States: a systems approach. *J Womens Health.* 2015;24(1):92–9. <https://doi.org/10.1089/jwh.2014.4870>
9. Moyer VA. Screening for intimate partner violence and abuse of elderly and vulnerable adults: US Preventive Services Task Force Recommendation Statement. *Ann Int Med.* 2013;158(6):478–86. <https://doi.org/10.7326/0003-4819-158-6-201303190-00588>
10. Dichter ME, Wagner C, Goldberg EB, Iverson KM. Intimate partner violence detection and care in the Veterans health administration: patient and provider perspectives. *Womens Health Issues.* 2015;25(5):555–60. <https://doi.org/10.1016/j.whi.2015.06.006>
11. Egypt Demographic and Health Survey 2014. Cairo, Egypt and Rockville, Maryland, USA: Ministry of Health and Population and ICF International; 2015 (<https://dhsprogram.com/pubs/pdf/fr302/fr302.pdf>, accessed 22 February 2018).
12. National Strategy for Combating Violence against Women 2015–2020. Cairo: Government of Egypt; 2015 (<http://evaw-global-database.unwomen.org/fr/countries/africa/egypt/2015/national-strategy-for-combating-violence-against-women-2015-2020>, accessed 22 February 2018).
13. Egypt Statistics. Population of Egypt. Cairo: Central Agency for Public Mobilization and Statistics; 2016 (<http://www.capmas.gov.eg/Pages/populationClock.aspx#>, accessed 11 August 2018).
14. Maiuro RD, Vitaliano PP, Sugg NK, Thompson DC, Rivara FP, Thompson RS. Development of a health care provider survey for domestic violence psychometric properties. *Am J Prev Med.* 2000;19(4):245–52. [https://doi.org/10.1016/s0749-3797\(00\)00230-0](https://doi.org/10.1016/s0749-3797(00)00230-0)
15. Global status report on violence prevention. Geneva: World Health Organization; 2014 (https://www.who.int/violence_injury_prevention/violence/status_report/2014/en/, accessed 22 August 2018).
16. Swailes AL, Lehman EB, McCall-Hosenfeld JS. Intimate partner violence discussions in the healthcare setting: a cross-sectional study. *Prev Med Rep.* 2017;8:215–20. <https://doi.org/10.1016/j.pmedr.2017.10.017>
17. Hamberger LK, Rhodes K, Brown J. Screening and intervention for intimate partner violence in healthcare settings: creating sustainable system-level programs. *J Womens Health.* 2015;24(1):86–91. <https://doi.org/10.1089/jwh.2014.4861>
18. Arrab MM, Ibrahim SH. Effect of educational training intervention on overcoming nurses' barriers to screening intimate partner violence against women in outpatient clinics. *Am J Nurs Res.* 2018;6(4):198–207. <https://doi.org/10.12691/ajnr-6-4-8>
19. Sprague S, Kaloty R, Madden K, Dosanjh S, Mathews DJ, Bhandari M. Perceptions of intimate partner violence: a cross sectional survey of surgical residents and medical students. *Int J Violence Res.* 2013;5(1):2–10. <https://doi.org/10.5249/jivr.v5i1.147>
20. Alotaby IY, Alkandari BA, Alshamali KA, Kamel MI, El-Shazly MK. Barriers for domestic violence screening in primary health care centers. *Alexandria J Med.* 2013;49(2):175–80. <https://doi.org/10.1016/j.ajme.2012.07.005>
21. Chapin JR, Coleman G, Varner E. Yes we can! Improving medical screening for intimate partner violence through self-efficacy. *J Inj Violence Res.* 2011;3(1):19–23. <https://doi.org/10.5249/jivr.v3i1.62>
22. McCarthy J, Bianchi A. Implementation of an intimate partner violence screening program in a university health care clinic. *J Am Coll Health.* 2019;68(4):444–52. <https://doi.org/10.1080/07448481.2019.1577864>
23. Aziz MM, El-Gazzar AF. Health care providers' perceptions and practices of screening for domestic violence in Upper Egypt. *Sex Reprod Healthc.* 2019;20:93–9. <https://doi.org/10.1016/j.srhc.2019.04.003>
24. Vieira EM, dos Santos MA, Ford NJ. Seizing an opportunity to help—knowledge and attitudes of doctors and nurses toward women victimized by intimate partner violence in Brazil. *Health Care Women Int.* 2012;33(3):228–49. <https://doi.org/10.1080/07399332.2011.646365>
25. Eldoseri HM, Tufts KA, Zhang Q, Fish JN. Adverse health effects of spousal violence among women attending Saudi Arabian primary health-care clinics. *East Med Health J.* 2014;20(11):717–26.
26. Al-Natour A, Gillespie GL, Felblinger D, Wang LL. Jordanian nurses' barriers to screening for intimate partner violence. *Violence Against Women.* 2014;20(12):1473–88. <https://doi.org/10.1177/1077801214559057>

27. Faboord F, Adelman T, Mckinnon T. Barriers to screening for domestic violence among public health nurses : a descriptive study. *Int J Nurs*. 2014;3(1):43–50. <https://doi.org/10.1002/nop2.133>
28. Lawoko S, Sanz S, Helström L, Castren M. Screening for intimate partner violence against women in healthcare Sweden: prevalence and determinants. *ISRN Nurs*. 2011;2011:510692. <https://doi.org/10.5402/2011/510692>
29. John IA, Lawoko S, Svanström L. Screening for intimate partner violence in healthcare in Kano, Nigeria: extent and determinants. *J Family Violence*. 2011;26(2):109–16. <https://doi.org/10.1007/s10896-010-9348-y>
30. Lawoko S, Ochola E, Oloya G, Piloya J, Lubega M, Lawoko-Olwe W, et al. Readiness to screen for domestic violence against women in healthcare Uganda: associations with demographic, professional and work environmental factors. *Open J Prev Med*. 2014;4(4):145–55. <https://doi.org/10.4236/ojpm.2014.44020>
31. Usta J, Feder G, Antoun J. Attitudes towards domestic violence in Lebanon: a qualitative study of primary care practitioners. *Br J Gen Pract*. 2014;64(623):e313–20. <https://doi.org/10.3399/bjgp14X680077>
32. Laisser RM, Nyström L, Lugina HI, Emmelin M. Community perceptions of intimate partner violence - a qualitative study from urban Tanzania. *BMC Womens Health*. 2011;11:13. <https://doi.org/10.1186/1472-6874-11-13>

Domestic violence among Omani women: prevalence, risk factors and help-seeking behaviour

Asma Al Kendi,¹ Nohour Al Shidhani¹ and Maisa Al Kiyumi²

¹Directorate-General of Primary Health Care, Ministry of Health, Muscat, Oman. ²Department of Family Medicine and Public Health, Sultan Qaboos University Hospital, Muscat, Oman. (Correspondence to: Maisa Al Kiyumi; maysa8172@gmail.com).

Abstract

Background: Domestic violence is a serious and often underreported problem. No studies on domestic violence have been conducted in Oman.

Aims: This study determined the prevalence and risk factors of emotional and/or physical domestic violence in Omani women, and the help-seeking behaviour of those experiencing domestic violence.

Methods: This cross-sectional study in 2019 included literate women aged 18–60 years old attending primary health care centres in Muscat region. A self-administered questionnaire was used to record the characteristics of the women and determine the prevalence of emotional and physical domestic violence. Logistic regression analysis was used to determine risk factors for domestic violence.

Results: Of 1051 women approached, 978 agreed to participate. Mean age of the women was 30.6 (standard deviation 6.9) years. Domestic violence was reported by 28.8% (282/978) of women: 21.0% (205/978) had experienced emotional domestic violence, 18.0% (176/978) physical domestic violence and 10.1% (99) both emotional and physical domestic violence. Domestic violence was significantly associated with husband's alcohol consumption (odds ratio (OR) = 9.85, 95% confidence intervals (CI): 1.00–96.94), feeling depressed (OR = 2.90, 95% CI: 1.75–4.81), insomnia (OR = 2.54, 95% CI: 1.57–4.10) and somatic symptoms (OR = 1.73, 95% CI: 1.08–2.78). Only 5.4% (11/205) of women experiencing emotional violence and 6.3% (11/176) experiencing physical violence had sought help from their doctors.

Conclusion: Emotional and physical domestic violence against women is common in Oman and is associated with poor health outcomes. Addressing domestic violence in Oman is important and requires collaboration between different sectors.

Keywords: domestic violence, women, prevalence, risk factors, Oman

Citation: Al Kendi A; Al Shidhani N; Al Kiyumi M. Domestic violence among Omani women: prevalence, risk factors and help-seeking behaviour. *East Mediterr Health J*. 2021;27(3):242–249. <https://doi.org/10.26719/2021.27.3.242>

Received: 06/10/19; accepted: 08/03/20

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Introduction

Domestic violence is a common and serious problem that is often underreported and under-recognized (1). The United Nations defines violence against women as “any act of gender-based violence that results in, or is likely to result in, physical, sexual, or mental harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life” (2).

Worldwide, it is estimated that one in three women suffers from some form of domestic violence (3). Studies conducted in Lebanon, Jordan, Egypt and Saudi Arabia reported a prevalence of domestic violence of 35%, 24%, 26% and 34%, respectively (4–7). The wide variation in the prevalence rates in these studies could be attributed to differences in the methods used.

Risk factors for domestic violence are similar for both pregnant and non-pregnant women (8). Being married, living within large families (more than five members), low educational level, and living in urban areas have been reported as significant predictors of emotional violence against women (9). Moreover, a recent systematic

review substantiated that unplanned pregnancy and having parents with less than a high-school education were the strongest modifiable predictors of domestic violence against women (10).

The impact of domestic violence against women on their health is well recognized (11). These effects include but are not limited to: injury, unintended pregnancy, miscarriage, sexually transmitted infections, and mental disorders (3). A systematic review confirmed that about one third of female homicides were a result of intimate partner violence (12). Importantly, the negative effects of domestic violence can extend to children who grow up in families where domestic violence occurs. Such children may be prone to behavioural and emotional instability (3). Similarly, intimate partner violence during pregnancy may lead to devastating effects on birth outcome such as low birth weight and prematurity (13).

While there have been no published study on domestic violence, a recent study concluded that depression during pregnancy was strongly associated with marital conflict (adjusted odds ratio (OR):13.83, $P < 0.001$) (14). However, marital conflict was not appropriately defined

and measured using a well-validated and reliable scale in that study. Therefore, there is an urgent need to study domestic violence in Omani women in more depth. We aimed to determine the prevalence and risk factors of emotional and/or physical domestic violence among Omani women attending primary health care centres in Wilayat Al-Seeb, Muscat, and the help-seeking behaviour of these women

Methods

Study design and sample

This was a cross-sectional study to determine the prevalence of domestic violence among literate Omani women. The study was conducted from 1 April 2019 to 30 July 2019 in the most populated *wilayat* of Muscat governorate. We randomly selected four out of nine primary health care centres (PHC) in the area for this study. The sample size for each selected health centre was proportional to its population size. It should be noted that the women who attended the PHC centres included some who were originally from different regions of Oman, but were living in the Muscat region for various reasons (e.g. work, education).

We calculated the sample size needed using the nMaster 2.0 software (15) based on an expected prevalence of domestic violence of 35%, absolute precision of 3 and a desired confidence level of 95%. The sample size was adjusted to a population size of 30 000 women (based on the estimated number of female attendees aged between 18 and 60 years old who attended the four PHC centres during the study period). Thus, the final sample size needed 940 women.

We used a consecutive sampling method to recruit women. Women attending the selected PHC centres who were literate (able to read and write), aged 18–60 years and not seriously ill (i.e. not needing to be seen as an emergency) were invited by a trained triage nurse to participate in this study. Written informed consent was obtained. Women who consented to participate were given a self-administered questionnaire to complete anonymously in a private place. For women who declined to participate, the nurse documented their reasons for not participating.

Questionnaire

The self-administered questionnaire had two parts. Part one asked about sociodemographic characteristics such as age, educational level (of the participant, her husband and her parents), family income, occupation of the participant and her husband, number of household family members, and smoking and alcohol consumption. Part two of the questionnaire consisted of the Arabic version of the NorVold Domestic Abuse Questionnaire (NORAQ). NORAQ is a self-administered, reliable and well-validated scale to determine the prevalence of emotional, physical and sexual violence (16). Its sensitivity ranges from 75% for emotional violence to 96% for physical violence. Specificity is 98% and 85% for emotional and physical abuse,

respectively (17). This questionnaire consists of the following parts: 1) General physical and mental health assessments; 2) Questions about emotional, physical and sexual violence; and 3) General questions related to violence including perpetrators and help-seeking behaviour. We did not include sexual violence in our study because many women were reluctant to answer questions on sexual violence during the initial pilot phase.

Participants were classified as having mild, moderate or severe emotional domestic violence if they answered “yes”, respectively, to: (i) Has anybody, systematically and for a long period, tried to repress, degrade or humiliate you?; (ii) Has anybody, systematically and by threat or force, tried to limit your contact with others, or totally controlled what you may and may not do?; (iii) Have you lived in fear because somebody, systematically and for a long period, threatened you or somebody close to you? (16). Similarly, physical violence was categorized as mild, moderate or severe if the woman responded positively to any of the following questions, respectively: (i) Has anybody hit you, smacked your face or held you firmly against your will?; (ii) Has anybody hit you with his/her fist(s) or with a hard object, kicked you, pushed you violently, given you a beating, thrashed you or done anything similar to you?; (iii) Has anybody threatened your life by, for instance, trying to strangle you, displaying a weapon or a knife, or by any other similar act? (16).

Statistical analysis

We used SPSS, version 24 for all statistical analyses. We did a univariate analysis to test the association between domestic violence and different variables using the chi-squared test. We also did a logistic regression analysis to adjust for the effects of confounders and odds ratios (OR) and 95% confidence intervals (CI) are reported. We considered a *P*-value of ≤ 0.05 to be statistically significant.

Ethical approval

Directorate General of Planning and Studies, Ministry of Health gave approval for the study (MOH/DGPS/MG-34/2018).

Results

Out of 1051 women who were invited to participate in our study, 978 agreed to fill in the questionnaire, a 93% response rate. The main reason for not agreeing to participate was a lack of time; those who did not participate were similar to those who did in terms of sociodemographic characteristics.

The mean age of the participants was 30.6 (standard deviation 6.9) years, and most of them (821 out of 978, 84.0%) were married. More than two thirds of the currently married women had been married ≤ 10 years. In addition, most of participants (601 out of 978, 61.5%) were living in a family with more than 5 members. More than half of the women who had experienced domestic violence were aged between 18 and 30 years old (54.3%; 153/282) and most were married (77.7%; 219/282). Furthermore, 90.8%

(256/282) of women experiencing domestic violence had a secondary school or higher education and 64.9% (183/282) of them were living in a house with five or more family members. Table 1 shows the baseline characteristics of our sample according to experience of domestic violence.

The prevalence of overall and type of life-long domestic violence based on the Arabic NorVold Domestic Abuse Questionnaire (NORAQ) is shown in Table 2. The overall prevalence of domestic violence was 28.8% (282/978). Emotional domestic violence was more common than physical domestic violence, prevalence 21.0% and 18.0%, respectively. Ninety-nine women (10.1%) reported being experiencing both emotional and physical domestic violence.

The univariate analysis showed that being divorced ($P < 0.001$), having a low income ($P < 0.001$) and alcohol consumption of the husband ($P < 0.001$) were significant predictors of domestic violence (Table 1). More women who had experienced domestic violence than those who had not reported feeling sad with loss of interest ($P < 0.001$), having sleep problems ($P < 0.001$) and suffering from somatic symptoms such as abdominal pain and headache ($P < 0.001$) (Table 1).

The logistic regression analysis showed that alcohol consumption of the husband (OR = 9.85 95% CI: 1.00–96.94; $P = 0.050$), feeling sad with loss of interest (OR = 2.90, 95% CI: 1.75–4.81; $P < 0.001$), sleep disturbance (OR = 2.54, 95% CI: 1.57–4.10; $P < 0.001$) and somatic symptoms (OR = 1.73, 95% CI: 1.08–2.78, $P = 0.022$) were significantly associated with domestic violence (Table 3).

Regarding the perpetrators of the domestic violence, 30.5% (86/282) of the women reported that the abuser was their father, 28.4% (80/282) said it was their husband or ex-husband and 27.3% (77/282) said it was their brother(s) (Figure 1). The rest of the participants reported that the perpetrators were other family members. Only 11 (5.4%) women who had experienced emotional violence and 11 (6.3%) women who had experienced physical violence had ever sought help from their doctors. In addition, only 15 (5.3%) women who had experienced domestic violence had ever filed a complaint to the police (Table 4).

Discussion

Our analysis showed that domestic violence against women is a common problem in Oman. Detrimental effects on health and well-being, such as depression, anxiety and insomnia, were more commonly reported by women who had ever experienced domestic violence. Notably, alcohol consumption by the woman's husband was a significant predictor of the occurrence of domestic violence, although the precision of this result is low because few women's husbands drank alcohol. Despite the serious consequences of domestic violence, only a small proportion of women had ever sought help from health service providers or others.

In Oman, women play a substantial role in advancing various areas of the country's development, including participation in education, the economy and politics.

Table 1 Characteristics of the women according to experience of domestic violence (n = 978), Oman, 2019

Characteristic	Experienced domestic violence (n = 570), Oman, 2019		P-value ^a
	Yes	No	
	No. (%)	No. (%)	
Age group (years)			
18–30	153 (29.5)	365 (70.5)	0.7
≥ 30	129 (28.4)	325 (71.6)	
Marital status			
Single	51 (38.1)	83 (61.9)	< 0.001
Married	219 (26.7)	602 (73.3)	
Widowed	2 (28.6)	5 (71.4)	
Divorced	10 (66.7)	5 (33.3)	
Years of marriage			
< 5	77 (26.5)	214 (73.5)	0.7
5–10	81 (26.8)	221 (73.2)	
11–15	34 (24.6)	104 (75.4)	
16–20	15 (30.6)	34 (69.4)	
> 20	13 (29.5)	31 (70.5)	
Number of children			
0–2	135 (25.3)	398 (74.7)	0.7
3–4	59 (29.2)	143 (70.8)	
≥ 5	16 (34.0)	31 (66.0)	
Number of people in household			
0–2	44 (26.0)	125 (74.0)	0.7
3–4	55 (26.4)	153 (73.6)	
≥ 5	183 (30.4)	418 (69.6)	
Monthly family income (US\$)			
< 1298	84 (36.7)	145 (63.3)	< 0.001
1298–2597	124 (25.6)	361 (74.4)	
≥ 2597	74 (28.0)	190 (72.0)	
Educational level (participant)			
Read and write	0 (0.0)	2 (100.0)	0.7
Up to preparatory	26 (31.7)	56 (68.3)	
Secondary and higher	256 (28.6)	638 (71.4)	
Educational level (mother)			
Illiterate	131 (27.1)	352 (72.9)	0.7
Up to preparatory	109 (30.9)	244 (69.9)	
Secondary and higher	42 (30.0)	98 (70.0)	
Educational level (father)			
Illiterate	103 (27.0)	279 (73.0)	0.7
Up to preparatory	113 (32.8)	231 (67.2)	
Secondary and higher	66 (26.5)	183 (73.5)	
Educational level (husband)			
Illiterate	5 (50.0)	5 (50.0)	0.7
Up to preparatory	28 (33.7)	55 (66.3)	
Secondary and higher	195 (26.2)	550 (73.8)	
Employment (participant)			
Unemployed	152 (27.1)	409 (72.9)	0.7
Employed	129 (31.2)	285 (68.8)	

Table 1 Characteristics of the women according to experience of domestic violence (n = 978), Oman, 2019 (Concluded)

Characteristic	Experienced domestic violence		P-value ^a
	Yes	No	
	No. (%)	No. (%)	
Employment (husband)			
Unemployed	6 (19.4)	25 (80.6)	0.7
Employed	217 (27.2)	581 (72.8)	
Smokes (participant)			
Yes	2 (66.7)	1 (33.3)	0.7
No	280 (28.7)	694 (71.3)	
Smokes (husband)			
Yes	23 (35.9)	41 (64.1)	0.7
No	199 (26.0)	566 (74.0)	
Drinks alcohol (participant)			
Yes	0 (0.0)	1 (100.0)	0.7
No	282 (28.9)	695 (71.1)	
Drinks alcohol (husband)			
Yes	6 (85.7)	1 (14.3)	< 0.001
No	216 (26.2)	607 (73.8)	
In the past year, have you felt sad, with loss of interest?			
No	118 (18.8)	509 (81.2)	< 0.001
Yes, sometimes	88 (41.7)	123 (58.3)	
Yes, most of the time	76 (54.3)	64 (45.7)	
In the past year, have you had difficulties sleeping which affected your daily activities?			
No	77 (16.8)	381 (83.2)	< 0.001
Yes, sometimes	99 (33.2)	199 (66.8)	
Yes, most of the time	106 (47.7)	116 (52.3)	
In the past year, have you had symptoms such as abdominal pain, headache, dizziness, muscle pain that affected your daily activities?			
No	54 (15.3)	298 (84.7)	< 0.001
Yes, sometimes	96 (30.1)	223 (69.9)	
Yes, most of the time	132 (43.0)	175 (57.0)	

US\$ = United States dollars.

^aChi squared test.

For instance, the percentage of women pursuing higher education exceeds that of men, and nearly 60% of jobs in the education and health sectors are held by women (18,19). Moreover, Oman has ratified the Convention on the Elimination of all forms of Discrimination Against Women (CEDAW) and embraced the United Nations Sustainable Development Goals (SDGs), which aim to eliminate all forms of violence against women (20). Oman has made marked improvement and progress in this field as indicated by a Gender Inequality Index value of 0.348, which outperforms the average score of other Arab states (0.545) (21). However, currently, there

is no screening programme or population-based survey to identify domestic violence against women in Oman. Furthermore, there is no specific legislation or policy that addresses domestic violence against women (22). In 2012, a shelter to protect women, who had experienced violence or abuse, was established, but access was limited only to individuals who were referred by the Prosecutor General or other law agencies (22). Some women who experience domestic violence (especially physical) report to the Ministry of Social Development directly, while others report to primary health care institutions, where their doctors will examine them and then the cases are referred to the police upon victim's request.

Our study identified an overall prevalence rate of lifetime domestic violence of 29%, which lies within the range of the prevalence in other Arabic countries (4–7,23). A recent systematic review of the prevalence of intimate-partner violence in Arab countries found the prevalence ranged from 6% to 59% for physical violence and 5% to 91% for emotional violence, although the evidence was fragmented (24). The reported prevalence in our study is lower than the prevalence in Lebanon, Saudi Arabia and Sudan (4,7,25). On the other hand, our reported prevalence is slightly higher than that of Jordan and Egypt (5,6). The explanation for such a variation in the prevalence of domestic violence among Middle Eastern countries could be attributed to heterogeneity in the research methodologies used and the influence of cultural differences.

Emotional domestic violence was the most common type reported by our Omani participants, which is consistent with other studies (4,26). A recent study in the Islamic Republic of Iran, corroborated emotional domestic violence as the most prevalent type of violence among abused women, with more than half of the participants suffering from it (27). The reasons for such a common

Table 2 Prevalence of overall and subtypes of domestic violence, Oman, 2019

Variable	No. (%) (n = 978)
Overall domestic violence	
Yes	282 (28.8)
No	696 (71.2)
Emotional domestic violence	
Mild	102 (10.4)
Moderate	38 (3.9)
Severe	65 (6.6)
Subtotal	205 (21.0)
Physical domestic violence	
Mild	18 (1.8)
Moderate	138 (14.1)
Severe	20 (2.0)
Subtotal	176 (18.0)
Mixed domestic violence (emotional and physical)	
	99 (10.1)

Based on the Arabic NorVold Domestic Abuse Questionnaire (16).

Table 3 Logistic regression analysis of risk factors for domestic violence, Oman, 2019

Risk factor	Adjusted OR (95% CI)	P-value
Marital status (divorced)	1.25 (0.016–95.72)	0.919
Low family income	0.73 (0.48–1.12)	0.150
Alcohol use (husband)	9.85 (1.00–96.94)	0.050
Feeling sad with loss of interest	2.90 (1.75–4.81)	< 0.001
Sleep disturbance	2.54 (1.57–4.10)	< 0.001
Somatic complaints	1.73 (1.08–2.78)	0.022

OR = odds ratio; CI = confidence interval.

finding could be explained by the fact that all other forms of violence (physical and sexual) may have an underlying emotional component (7). In addition, emotional abuse is often considered a precursor to physical abuse (28).

The negative consequences of domestic violence on health have been extensively studied (29–31). In our study, depression, anxiety, insomnia and somatic symptoms were significantly more common in women who had experienced domestic violence.

Alcohol consumption by the husband was a significant predictor of domestic violence in our sample, which is consistent with other studies (29,32,33). Heavy alcohol consumption and its consequences such as aggressive behaviour and loss of self-control may lead to an impaired marital relationship and therefore a low level of marital satisfaction (34,35).

The women in our study who had experienced domestic violence were more often abused by their fathers, husbands/ex-husbands or brothers. Our result is similar to what has been reported in Peru (29). Of concern is that some women had experienced violence from more than one person, and that non-partner violence is the most common form of domestic violence against women in Oman.

Despite the distressing effects of domestic violence, only a small proportion of women had sought help. This reluctance to seek help is consistent with other studies (7,16) and might be due to the following reasons: (i) cultural factors and social pressures that often oblige women to consider the family as a private sphere and thereby no information should be disclosed (36); (ii) fear of retaliation by the spouse, such as separation of the mother from children; (iii) men's authority in some

Middle Eastern families (4); (iv) family belief that a man has the right to beat his wife if she disobeys him – such beliefs may increase the risk of domestic violence against women (37); and (v) underdeveloped social and health care services to address domestic violence or lack of awareness of women of the availability of such services may delay early notifications and therefore lead to more serious consequences.

Our study is among the few studies conducted in the Middle East region on domestic violence, and adds supplementary data to the existing fragmented evidence. It highlighted the magnitude of domestic violence and its association with poor health outcomes. Thus, addressing domestic violence is of utmost importance, and requires collaboration between different sectors. More investment in studying and preventing domestic violence against women in Oman is needed. This objective can be achieved through more dedicated and high-quality population-based surveys, such as demographic and health surveys, to ensure continuous monitoring of domestic violence and reporting of SDG indicators. Different health and social programmes related to women health's issues should take domestic violence into account.

Promoting early prevention and increasing awareness of the existence of domestic violence and its detrimental effects via the media, and public and school campaigns is an important step. Similarly, strengthening the existing primary health care services by implementing a comprehensive and integrated approach for victims of domestic violence will significantly reduce their impact and burden on the community. Studies have shown that enquiring about domestic violence at the primary care level was socially acceptable and preferred by most women (38,39). Health care providers must be appropriately trained to deal with cases of domestic violence in a sensitive manner and ensure that women do not feel stigmatized and their confidentiality and privacy are maintained (29). Furthermore, strengthening other formal and non-formal social services, such as counselling, shelters and hotlines for rapid access, have been effective (40).

Our study has some limitations. It was based on a self-administered questionnaire that may result in the overestimation of the true prevalence of domestic violence. Moreover, some questions related to past events depend on memory and therefore may predispose our findings to the risk of recall bias. In addition, the cross-

Table 4 Help-seeking behaviour of women who experienced domestic violence, Oman, 2019

Help-seeking behaviour	Yes No. (%)	No No. (%)
Have you ever tried to tell anyone about the emotional abuse that you have experienced? (n = 205)	58 (28.3)	147 (71.7)
Did you tell your doctor about the emotional abuse that you have experienced? (n = 205)	11 (5.4)	194 (94.6)
Have you ever tried to tell anyone about the physical abuse that you have experienced? (n = 176)	24 (13.6)	152 (86.4)
Did you tell your doctor about the physical abuse that you have experienced? (n = 176)	11 (6.3)	165 (93.7)
Did you file a complaint to the police? (n = 282)	15 (5.3)	267 (94.7)

sectional design of the study makes it difficult to derive causal relationships between variables. Furthermore, sexual violence, which is an important area that is often overlooked, was not included in our study. Finally, exclusion of the illiterate women, may have resulted in an underestimation of the true prevalence of domestic violence among Omani women.

As this is the first study about domestic violence in Oman, more studies in this field which also include illiterate women are needed to confirm our findings. In particular, studies addressing other types of domestic

violence such as sexual and economic violence should be considered for future research. Exploring women's thoughts about domestic violence and the possible reasons or fears that prevent them from seeking help need to be investigated using a well-structured qualitative study.

Funding: Deanship of the Research Fund, Sultan Qaboos University, Muscat, Oman.

Competing interests: None declared.

Violence domestique à l'encontre des femmes omanaises : prévalence, facteurs de risque et comportements en matière de recherche d'aide

Résumé

Contexte : La violence domestique est un problème grave qui est souvent sous-notifié. Aucune étude antérieure sur la violence domestique n'a été menée à Oman.

Objectifs : La présente étude a permis de déterminer la prévalence et les facteurs de risque de violence domestique émotionnelle et/ou physique exercée à l'encontre des femmes omanaises, ainsi que le comportement des victimes de violence domestique en matière de recherche d'aide.

Méthodes : La présente étude transversale incluait des femmes alphabétisées âgées de 18 à 60 ans fréquentant des centres de soins de santé primaires dans la région de Mascate. Un questionnaire auto-administré a été utilisé pour enregistrer les caractéristiques des femmes et déterminer la prévalence de la violence domestique émotionnelle et physique. Une analyse de régression logistique a été effectuée pour identifier les facteurs de risque de la violence domestique.

Résultats : Sur 1051 femmes contactées, 978 ont accepté de participer. L'âge moyen des femmes était de 30,6 ans (écart type 6,9). Des violences domestiques ont été signalées par 28,2 % des femmes (282/978) dont 21,0 % avaient subi de la violence domestique émotionnelle (205/978), 18,0 % ont été victimes de violence domestique physique (176/978) et 10,1 % avaient signalé à la fois les deux types de violence domestique (99/978). La violence domestique était associée de manière significative à la consommation d'alcool du mari (odds ratio (OR) = 9,85, intervalle de confiance (IC) à 95 % : 1,00-96,94) à la dépression (OR = 2,90, IC à 95 % : 1,75-4,81), à l'insomnie (OR = 2,54 ; IC à 95 % : 1,57-4,10) et aux symptômes somatiques (OR = 1,73, IC à 95 % : 1,08-2,78). Seules 5,4 % des femmes victimes de violence émotionnelle (11/205) et 6,3 % des femmes ayant subi de la violence physique (11/176) avaient déjà demandé l'aide de leur médecin.

Conclusion : La violence domestique émotionnelle et physique contre les femmes constitue un problème courant à Oman et elle est associée à de mauvais résultats sanitaires. Il est primordial de lutter contre ce type de violence à Oman et cela nécessite une collaboration entre les différents secteurs.

العنف العائلي بين النساء العُمانيات: الانتشار، وعوامل الخطر، وسلوك التماس المساعدة

أسماء الكندي، نهور الشيداني، مایسة الكیومی

الخلاصة:

الخلفية: يُعتبر العنف العائلي من المشاكل الخطيرة التي يوجد قصور في الإبلاغ عنها. ولم تُجر أي دراسات سابقة عن العنف العائلي في عُمان.

الأهداف: هدفت هذه الدراسة إلى تحديد مدى انتشار العنف العائلي العاطفي و/أو البدني بين النساء العُمانيات وعوامل الخطر المرتبطة به، وسلوك التماس المساعدة من قبل النساء اللاتي تتعرضن للعنف العائلي.

طرق البحث: شملت هذه الدراسة المقطعية النساء المتعلّقات اللاتي تتراوح أعمارهن بين 18-60 عاماً ويترددن على مراكز الرعاية الصحية الأولية في منطقة مسقط. واستُخدم استبيان يستكمل ذاتياً، ويشمل النسخة العربية من استبيان نورفولد حول العنف العائلي لتسجيل خصائص هؤلاء النساء وتحديد مدى انتشار العنف العائلي العاطفي والبدني. واستُخدم تحليل الانحدار اللوجستي للوقوف على عوامل الخطر المرتبطة بالعنف العائلي.

النتائج: من بين 1051 امرأة جرى الاتصال بهن، وافقت 978 امرأة على المشاركة. وكان متوسط عمر النساء اللاتي شاركن 30.6 عاماً (بانحراف معياري 6.9). وقد أبلغت 282 امرأة (28.9٪) عن تعرضهن للعنف العائلي، 205 منهن (20.9٪) تعرضن لعنف عائلي عاطفي، و176 منهن (17.8٪) تعرضن لعنف عائلي بدني، و99 منهن (10.1٪) أبلغن عن تعرضهن لعنف عائلي عاطفي وبدني. وقد ارتبط العنف العائلي ارتباطاً كبيراً

بتعاطي الزوج للكحول (نسبة الأرجحية = 9.85، 95٪ فاصل الثقة: 1.00–96.94)، واختلال الصحة النفسية والبدنية للنساء، مثل إصابتهن بالاكتئاب (نسبة الأرجحية = 2.90، 95٪ فاصل الثقة: 1.75–4.81)، والأرق (نسبة الأرجحية = 2.45، 95٪ فاصل الثقة: 1.75–4.10)، والأعراض الجسدية (نسبة الأرجحية = 1.73، 95٪ فاصل الثقة: 1.08–2.78). ولم تلتزم المساعدة من الأطباء سوى 11 امرأة فقط (5.4٪) ممن تعرضن لعنف عاطفي و11 امرأة فقط (6.3٪) ممن تعرضن لعنف بدني.

الاستنتاجات: إن العنف العاطفي والبدني ضد المرأة مشكلة شائعة في عُمان، ويرتبط بالمخرجات الصحية السيئة. ويُعتبر التصدي للعنف العائلي في عُمان أمراً بالغ الأهمية ويتطلب التعاون بين مختلف القطاعات.

References

- Gracia E. Unreported cases of domestic violence against women: towards an epidemiology of social silence, tolerance, and inhibition. *J Epidemiol Community Health*. 2004;58(7):536–7. <http://doi.org/10.1136/jech.2003.019604>
- Declaration on the elimination of violence against women. New York: United Nations; 1993.
- Violence against women. Geneva: World Health Organization; 2017.
- Usta J, Farver JA, Pashayan N. Domestic violence: the Lebanese experience. *Public Health*. 2009;121(3):208–19. <http://doi.org/10.1016/j.puhe.2006.09.014>
- Proportion of ever-partnered women aged 15–49 years experiencing intimate partner physical and/or sexual violence at least once in their lifetime. Amman: Department of Statistics Jordan and ICF International; 2013.
- El-Zanaty and Associates and ICF International. Proportion of ever-partnered women aged 15–49 years experiencing intimate partner physical and/or sexual violence at least once in their lifetime. Cairo: Ministry of Health and Population and ICF International; 2015.
- Fageeh WMK. Domestic violence among women in Jeddah. *J Womens Health Care*. 2017;6(1). <http://doi.org/10.4172/2167-0420.1000354>
- Intimate partner violence during pregnancy Geneva: World Health Organization; 2011.
- Al-Shdayfat N. Emotional abuse among Syrian refugee women in Jordan. *Global J Health Sci*. 2017;9(3):237–47. <http://dx.doi.org/10.5539/gjhs.v9n3p237>
- Yakubovich AR, Stöckl H, Murray J, Melendez-Torres GJ, Steinert JI, Glavin CEY, et al. Risk and protective factors for intimate partner violence against women: systematic review and meta-analyses of prospective–longitudinal studies. *Am J Public Health*. 2018;108(7):e1–11. <http://doi.org/10.2105/AJPH.2018.304428>
- García-Moreno C, Jansen HA, Ellsberg M, Heise L, Watts C. WHO multi-country study on women's health and domestic violence against women: initial results on prevalence, health outcomes and women's responses. Geneva: World Health Organization; 2005.
- Stöckl H, Devries K, Rotstein A, Abrahams N, Campbell J, Watts C, et al. The global prevalence of intimate partner homicide: a systematic review. *Lancet*. 2013;382(9895):859–65. [http://doi.org/10.1016/S0140-6736\(13\)61030-2](http://doi.org/10.1016/S0140-6736(13)61030-2)
- Hill A, Pallitto C, McCleary-Sills J, Garcia-Moreno C. A systematic review and meta-analysis of intimate partner violence during pregnancy and selected birth outcomes. *Int J Gynecol Obstet*. 2016;133(3):269–76. <http://doi.org/10.1016/j.ijgo.2015.10.023>
- Al-Azri M, Al-Lawati I, Al-Kamyani R, Al-Kiyumi M, Al-Rawahi A, Davidson R, et al. Prevalence and risk factors of antenatal depression among Omani Women in a primary care setting. *Sultan Qaboos Univ Med J*. 2016;16(1):e35–41. <http://doi.org/10.18295/squmj.2016.16.01.007>
- nMaster 2.0. Sample size software. Vellore: Christian Medical College; 2012.
- Haddad LG, Shotar A, Younger JB, Alzyoud S, Bouhaidar CM. Screening for domestic violence in Jordan: validation of an Arabic version of a domestic violence against women questionnaire. *Int J Womens Health*. 2011;3:79–86. <http://doi.org/10.2147/IJWH.S17135>
- Swahnberg K, Wijma B. The NorVold Abuse Questionnaire (NorAQ): validation of new measures of emotional, physical, and sexual abuse, and abuse in the health care system among women. *Eur J Public Health*. 2004;13(4):361–6. <http://doi.org/10.1093/eurpub/13.4.361>
- Rethinking economic growth: towards productive and inclusive Arab societies. Beirut: International Labour Organization, Regional Office for the Arab States and UNDP Regional Bureau for Arab States; 2012.
- Statistical year book, Oman. Muscat: National Centre for Statistics and Information; 2019.
- Status of Arab women report 2017. Violence against women: what is at stake? New York: United Nations; 2017.
- Human development report 2014. Sustaining human progress: reducing vulnerabilities and building resilience. New York: United Nations Development Programme; 2014.
- UNFPA, UNDP, UN Women, ESCWA. Gender justice & the law: Oman. New York: United Nations Population Fund; 2018 (<https://arabstates.unfpa.org/en/publications/gender-justice-law-oman>, accessed 10 August 2020).

23. Maziak W, Asfar T. Physical abuse in low-income women in Aleppo, Syria. *Health Care Women Int.* 2003;24(4):313–26. <http://doi.org/10.1080/07399330390191689>
24. Elghossain T, Bott S, Akik C, Makhoulf Obermeyer C. Prevalence of intimate partner violence against women in the Arab world: a systematic review. *BMC Int Health Hum Rights.* 2019;19,29. <http://doi.org/10.1186/s12914-019-0215-5>
25. Ahmed AM, El Mardi AE. A study of domestic violence among women attending a medical centre in Sudan. *East Mediterr Health J.* 2005;11(1/2):164–74.
26. Afifi ZE, Al-Muhaideb NS, Hadish NF, Ismail FI, Al-Qeamy FM. Domestic violence and its impact on married women's health in Eastern Saudi Arabia. *Saudi Med J.* 2011;32(6):612–20.
27. Moazen B, Salehi A1, Soroush M, Molavi Vardanjani H, Zarrinhaghighi A. Domestic violence against women in Shiraz, South-western Iran. *J Inj Violence Res.* 2019;11(2):243–54. <http://doi.org/10.5249/jivr.v11i2.1238>
28. Murphy CM, O'Leary KD. Psychological aggression predicts physical aggression in early marriage. *J Consult Clin Psychol.* 1989;57(5):579–82. <http://doi.org/10.1037//0022-006x.57.5.579>
29. WHO multi-country study on women's health and domestic initial results on prevalence, health outcomes and women's response. Geneva: World Health Organization; 2005 (<https://www.who.int/reproductivehealth/publications/violence/24159358X/en/>, accessed 23 February 2018).
30. Oram S, Khalifeh H, Howard LM. Violence against women and mental health. *Lancet Psychiatry.* 2017;4(2):159–70. [https://doi.org/10.1016/S2215-0366\(16\)30261-9](https://doi.org/10.1016/S2215-0366(16)30261-9)
31. Hawcroft C, Hughes R, Shaheen A, Usta J, Elkadi H, Dalton T, et al. Prevalence and health outcomes of domestic violence amongst clinical populations in Arab countries: a systematic review and meta-analysis. *BMC Public Health.* 2019;19:315. <https://doi.org/10.1186/s12889-019-6619-2>
32. Yusuf G, Huseyin C. Ethnic background and alcohol use of the spouse emerge as major risk factors for domestic violence: an observational study from Turkey. *J Pakistan Med Assoc.* 2018;68(12):1782–6.
33. Fageeh WMK. Factors associated with domestic violence: a cross-sectional survey among women in Jeddah, Saudi Arabia. *BMJ Open.* 2014;4:e004242. <https://doi.org/10.1136/bmjopen-2013-004242>
34. Homish GG, Leonard E. The drinking partnership and marital satisfaction: the longitudinal influence of discrepant drinking. *J Consult Clin Psychol.* 2007;75:43–51. <https://doi.org/10.1037/0022-006X.75.1.43>
35. Homish GG, Leonard KE. Marital quality and congruent drinking. *J Stud Alcohol.* 2005;66(4):488–96. <https://doi.org/10.15288/jsa.2005.66.488>
36. Al-Adawi S, Al-Bahlani S. Domestic violence: “What's love got to do with it?”. *Sultan Qaboos Univ Med J.* 2007;7(1):5–14.
37. Haj Yahia MM. A patriarchal perspective of beliefs about wife beating among Palestinian men from the West Bank and the Gaza Strip (Israel). *J Fam Issues.* 1998;19:595–621. <https://doi.org/10.1177/019251398019005006>
38. Usta J, Antoun J, Ambuel B, Khawaja M. Involving the health care system in domestic violence: what women want. *Ann Fam Med.* 2012;10(3):213–20. <https://doi.org/10.1370/afm.1336>
39. Ramsay J, Richardson J, Carter YH, Davidson LL, Feder G. Should health professionals screen women for domestic violence? Systematic review. *BMJ.* 2002;325(7359):314. <https://doi.org/10.1136/bmj.325.7359.314>
40. Bennett L, Riger S, Schewe P, Howard A, Wasco S. Effectiveness of hotline, advocacy, counseling, and shelter services for victims of domestic violence: a statewide evaluation. *J Interpers Violence.* 2004;19(7):815–29. <https://doi.org/10.1177/088626050>

Child maltreatment: knowledge, attitudes and reporting behaviour of physicians in teaching hospitals, Egypt

Nourhan Saeed,¹ Eman Anwar Sultan,² Naglaa Salama,¹ Mohammed Galal³ and Maha Ghanem¹

¹Department of Forensic Medicine and Clinical Toxicology, Faculty of Medicine, University of Alexandria, Alexandria, Egypt. ²Department of Community Medicine, Faculty of Medicine, University of Alexandria, Alexandria, Egypt. ³Department of Ophthalmology, Faculty of Medicine, University of Alexandria, Alexandria, Egypt. (Correspondence to: Nourhan Saeed: nourhanaboshabana@gmail.com).

Abstract

Background: Lack of diagnosis and reporting of child maltreatment are important problems worldwide.

Aims: This study aimed to assess the knowledge, attitude and practice of physicians in Alexandria University teaching hospitals about the diagnosis and reporting of child maltreatment cases.

Methods: A descriptive cross-sectional study was conducted at three hospitals. All physicians working regularly in emergency units were invited to complete a self-administered questionnaire. Data collected included sociodemographic characteristics, knowledge of and formal training on child maltreatment, attitude to dealing with child maltreatment, and experience of child maltreatment cases and reporting behaviour.

Results: A total of 90 physicians were included in the study. Only 11% correctly identified all the signs of child maltreatment and 29% correctly answered all questions on the social indicators of maltreatment. Only 41% of the participants had a good knowledge score ($\geq 75\%$) on child maltreatment. Longer work experience ($P = 0.019$) and older age ($P = 0.039$) were associated with better knowledge. Of 249 suspected cases of child maltreatment that the physicians reported they had experienced, only 36% were reported. Formal training on child maltreatment ($P < 0.001$) and older age ($P = 0.006$) were associated with physicians' reporting behaviour. Over half (56%) of the participants thought their workplaces did not provide them with procedures to follow if they suspected child maltreatment.

Conclusion: Physicians' knowledge of the signs and social indicators of child maltreatment was unsatisfactory. Clinical training and education are needed to improve their ability to diagnosis and report cases of child maltreatment.

Keywords: child abuse, physicians, knowledge, university hospitals, Egypt

Citation: Saeed N; Sultan EA; Salama N; Galal M; Ghanem M. Child maltreatment: knowledge, attitudes and reporting behaviour of physicians in teaching hospitals, Alexandria, Egypt. *East Mediterr Health J.* 2021;27(3):250–259. <https://doi.org/10.26719/emhj.20.126>

Received: 03/12/19; accepted: 17/03/20

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Introduction

Child maltreatment is a problem in all countries, possibly because of failure in committing to child rights (1). The World Health Organization (WHO) estimated in 2016, that 1 in 2 children aged 2–17 years had suffered violence in the past year. Boys and girls are at equal risk of physical and emotional abuse and neglect, and girls are at greater risk of sexual abuse (2).

Lack of diagnosis and reporting of child maltreatment were considered the main problems in stopping the maltreatment in up to 75% of cases (3). Reporting all cases of child maltreatment is vital in order to prevent further exposure, protect children and enhance coordination between legal, medical and social services. However, physicians need preparation for the ethical and legal challenges in cases of child maltreatment. This is considered necessary because evidence suggests that, on their own, physicians are not able to deal with these challenges when confronted with them (4–6).

Few studies about child maltreatment in Egypt are available. One study estimated that 91% of children in Egypt are exposed to child abuse with varying degrees of severity (7). In Egypt, law No. 126 ensures a child's right to

be protected from all forms of violence (8). However, no law states the mandatory reporting of child maltreatment and penalties of non-reporting. In this study we, aimed to assess the knowledge, attitude and opinion of physicians in Alexandria University teaching hospitals about the diagnosis and reporting of child maltreatment as an important first step to developing interventions and setting laws and legislations to protect children from maltreatment.

Methods

Setting and sample

We conducted a descriptive cross-sectional study from July to December 2018 at three hospitals affiliated to Alexandria University: Main University Hospital, El-Shatby hospital and El-Hadara hospital. Our sample was all physicians (residents, teaching assistants and assistant lecturers) working in the emergency units of these hospitals on a regular basis who had frequent contact with child maltreatment cases and were willing to participate in the study.

Data collection

We used a structured self-administered questionnaire for data collection adapted from other questionnaires (9–11). The questionnaire was in English. We tested the validity and reliability of the questionnaire before use. First, we asked three Egyptian experts in the field of medical education and research at the Faculty of Medicine to assess the degree to which items in the questionnaires were relevant and could correctly measure the knowledge and attitudes of participants regarding child maltreatment. As a result of their feedback, we modified questions on the causes of underreporting and not taking action if child maltreatment was suspected to include the main possible causes relevant to the Egyptian culture.

We then pretested the questionnaire on 14 physicians who we excluded from the later study sample. They completed the questionnaire twice, 3 weeks apart. We assessed internal consistency and reliability using the Cronbach alpha and the test–retest reliability using intraclass correlation coefficient. The results showed adequate internal consistency and reliability: Cronbach alpha = 0.82 and the intraclass correlation coefficient = 0.94). The pilot study also indicated some modifications were needed to the structure of the questionnaire (e.g. using simple, familiar words and clarifying some sentences).

The questionnaire had five main sections:

- Sociodemographic characteristics of the physicians (age, sex, years of experience and highest scientific degree) and formal child maltreatment training.
- Knowledge of physicians about child maltreatment, e.g. knowledge of signs and symptoms of child maltreatment, different forms of child maltreatment and to which legal authority child maltreatment cases should be reported.
- Attitudes of physicians to child maltreatment using a five-point Likert scale and their opinions on the main causes of underreporting of child maltreatment cases.
- Experience of physicians of cases of child maltreatment, their reporting behaviour with suspected cases of child maltreatment and barriers to reporting suspected cases.
- Physicians' satisfaction with their knowledge of child maltreatment and procedures of dealing with child maltreatment, and their desire to improve their knowledge and how they could do this.

The physicians completed the questionnaire with a researcher available for any questions. As the researcher dealt with the respondents personally, there was no risk of the same physician completing the questionnaire more than once. The questionnaire took on average about 15–20 minutes to complete.

Data analysis

We used SPSS, version 20.0 for data entry and analysis (12,13). For testing associations between qualitative vari-

ables, we used the chi-squared, Fisher exact and Monte Carlo tests. For normally distributed quantitative variables, we used a two-sample *t*-test to compare between two groups and ANOVA to compare between more than two groups. We considered $P \leq 0.05$ statistically significant.

For each knowledge question, we assigned a score of 1 for a correct answer and 0 for an incorrect answer. The maximum total score was 21. We summed the scores and calculated the total percentage score. We rated the total percentage scores as follows: < 50% = poor knowledge, 50% to < 75% = fair knowledge and $\geq 75\%$ = good knowledge.

Ethical considerations

The Institutional Review Board of the Faculty of Medicine, Alexandria University approved the study (IRB 0121026, FWA 00018699) on 16 November 2017. Verbal consent was collected from participants and data was collected anonymously to ensure confidentiality.

Results

The questionnaire was distributed by the researchers to all the target physicians at the emergency departments of the three studied hospitals. The physicians were asked to self-complete the questionnaire with a researcher available for any questions. Of the 120 physicians approached, 102 agreed to participate, response rate of 85%. In addition, 12 physicians did not answer some of the questions and we excluded them. Therefore, 90 respondents were included in the analysis.

The age of physicians ranged from 25 to 33 years with a mean of 28.33 (SD 1.9) years. Just over half (46 (51%)) of the physicians were men. Half of the physicians (45 (50%)) had 6–10 years of work experience, 38 (42%) had 5 years or fewer, and only 7 (8%) had more than 10 years of experience. Moreover, 37 (41%) of the sample were specialized in paediatrics, 18 (20%) were orthopaedic surgeons, 18 (20%) were forensic medicine and toxicology specialists and 17 (19%) were emergency room physicians. Most of the physicians (62 (69%)) had a bachelor's degree and 28 (31%) had a master's degree.

Most of physicians (83 (92%)) said that they had never received any formal training specific to child maltreatment while only 7 (8%) indicated that they had.

Knowledge of the physicians about child maltreatment is given in Table 1. Only 10 (11%) of the physicians correctly identified all the signs of child maltreatment. Burn marks was the most frequently identified sign (86 (96%)) followed by broken teeth without reasonable cause (80 (89%)). Eleven (12%) physicians did not know the signs of child maltreatment.

About a third of the physicians (29 (32%)) responded correctly to all the questions on the action that should be taken when they suspected a case of child maltreatment. Reporting the case to a legal authority was the most common chosen action (79 (88%)). Nevertheless, (5 (6%)) indicated that the physicians should not take any action. More than half of the physicians (52 (58%)) thought the

Table 1 Distribution of the physicians according to knowledge about physical and social indications of child maltreatment (n = 90)

Knowledge of physical indications of child maltreatment	No. (%)	No. (%)
	Yes	No
Sign of child maltreatment		
Bruises over bony prominences	70 (78)	20 (22)
Broken teeth, without reasonable cause ^a	80 (89)	10 (11)
Burn marks ^a	86 (96)	4 (4)
Dental caries	23 (26)	67 (74)
Head trauma ^a	69 (77)	21 (23)
Bite marks ^a	71 (79)	19 (21)
Careless parents ^a	69 (77)	21 (23)
Shy personality	37 (41)	53 (59)
Has attempted suicide ^a	48 (53)	42 (47)
Abuses alcohol or other drugs ^a	46 (51)	44 (49)
I don't know	11 (12)	79 (88)
All correct answers (7 signs)	10 (11)	80 (89)
Knowledge of social indicators of child maltreatment		
	True	False
Children who have been exposed to child maltreatment will usually tell someone soon after the abuse	24 (27)	66 ^a (73)
Child maltreatment is primarily associated with the stresses of poverty and rarely occurs in middle- or high-income families	44 (49)	46 ^a (51)
The abuser in most cases is someone the child knows well from his/her surrounding environment	73 ^a (81)	17 (19)
The best way to deal with suspected cases of child maltreatment is to confront the parents and accuse them directly of the abuse	26 (29)	64 ^a (71)
All correct answers (4 items)		
	Yes	No
	26 (29)	64 (71)
First action a physician should take if he/she suspects child maltreatment		
Ask the child and parents about the signs/symptoms you noticed ^a	71 (79)	19 (21)
Document the signs/symptoms and your suspicion on the child's file ^a	70 (78)	20 (22)
Monitor the case in following visits ^a	56 (62)	34 (38)
Report to a legal authority ^a	79 (88)	11 (12)
Check the consistency of parents' and/or child's explanation with the clinical findings ^a	67 (74)	23 (26)
Do nothing	5 (6)	85 (94)
Don't know	11 (12)	79 (88)
All correct answer (5 actions)	29 (32)	61 (68)
Circumstances in which physicians should report cases of child maltreatment to an authority		
All circumstances even if child maltreatment is only suspected ^a	60 (67)	30 (33)
In severe cases of child maltreatment	27 (30)	63 (70)
In cases where the physical violence to a child is repetitive	27 (30)	63 (70)
Never	0 (0)	90 (100)
Don't know	7 (8)	83 (92)
The authority to which child maltreatment cases should be reported (select only one answer)		No. (%)
Your superior		11 (12)
Head of your department		10 (11)
Ministry of Health		1 (1)
Police ^a		52 (58)
Other, please specify (social worker)		1 (1)
Don't know		15 (17)
Knowledge score		
Poor (< 50%)		9 (10)
Fair (50–< 75%)		44 (49)
Good (≥ 75%)		37 (41)

^aCorrect answer.

case should be reported to the police and 15 (16.7%) said they did not know which authority a case should be reported to.

Regarding the circumstances in which physicians should report a case of child maltreatment to the authorities, 60 (67%) of the participants correctly identified that it should be reported in all circumstances even if the abuse is only suspected. A minority of physicians (7 (8%)) did not know when to report a case of child maltreatment.

For the social indicators of child maltreatment, 26 (29%) of the physicians correctly answered all four questions. Most (73 (81%)) identified that the abuser in most cases of child maltreatment is someone the child knows well from his/her surrounding environment, 66 (73%) correctly reported that children exposed to maltreatment generally delay telling anybody about the incident, and 64 (71%) agreed that it was better not to confront the parents and accuse them directly of the abuse. Only 46 (51.1%) of the physicians knew that child maltreatment is not primarily associated with poverty and can occur in any socioeconomic group.

The main sources of knowledge on child maltreatment were undergraduate and postgraduate courses; 50 (56%) and 20 (22%), respectively. Only 3 (3%) physicians said they had knowledge from clinical experience and 2 (2%) from online sources; 15 (17%) of the physicians had no sources of information on child maltreatment. None had obtained information through continuing education or special courses on child maltreatment.³

The overall percentage knowledge score ranged from 33.3% to 100.0% with a mean (standard deviation) of 69.47% (14.52%) and median of 71.4%. About half the physicians (44 (49%)) had fair knowledge (score 50–< 75%) and 37 (41%) had good knowledge (score \geq 75%).

Table 2 shows the association between overall knowledge of child maltreatment, and physicians' demographic characteristics and training of. More than 10 years of experience ($P = 0.019$) and age ≥ 30 years ($P = 0.039$) were significantly associated with better knowledge of child maltreatment. Level of knowledge was not significantly associated with sex, specialty, qualification and training on child maltreatment.

Table 2 Association between overall knowledge and demographic characteristics of the physicians and their training on child maltreatment

Characteristic	Overall knowledge			Test of significance value (P-value)
	Poor No. (%)	Fair No. (%)	Good No. (%)	
Age (years)				
< 30	6 (9)	38 (57)	23 (34)	6.506 ^a (0.039)
≥ 30	3 (13)	6 (26)	14 (61)	
Sex				
Male	4 (9)	25 (54)	17 (37)	1.171 ^a (0.586)
Female	5 (11)	19 (43)	20 (46)	
Years of experience				
≤ 5	5 (13)	24 (63)	9 (24)	10.738 ^a (0.019)
6–≤ 10	4 (9)	19 (42)	22 (49)	
> 10	0 (0)	1 (14)	6 (86)	
Range	3.0–8.0	3.0–10.0	4.0–12.0	0.849 ^b (0.431)
Mean (SD)	6.11 (1.62)	5.93 (1.62)	6.49 (2.27)	
Specialty				
Pediatrics	6 (16)	16 (43)	15 (40)	6.465 ^a (0.356)
Orthopedics	1 (6)	8 (44)	9 (50)	
Emergency room	2 (12)	11 (65)	4 (23)	
Forensic and toxicology	0 (0)	9 (50)	9 (50)	
Highest/last scientific degree				
Bachelor's degree	5 (8)	34 (55)	23 (37)	2.971 ^a (0.226)
Master's degree	4 (14)	10 (36)	14 (50)	
Received formal training on child maltreatment				
Yes	1 (14)	2 (29)	4 (57)	1.675 ^a (0.406)
No	8 (10)	42 (51)	33 (40)	

SD= standard deviation.

^aChi squared test.

^bF for ANOVA test.

$P \leq 0.05$ was considered statistically significant.

Table 3 Distribution of the physicians according to their views on child maltreatment (n = 90)

Statements on child maltreatment	Strongly disagree No. (%)	Disagree No. (%)	Neutral No. (%)	Agree No. (%)	Strongly agree No. (%)
Detecting and reporting child maltreatment is important	0 (0)	0 (0)	2 (2)	13 (14)	75 (83)
Physicians have an important role in detecting and reporting cases of child maltreatment	0 (0)	0 (0)	1 (1)	24 (27)	65 (72)
As a physician, you are able to detect child maltreatment cases	0 (0)	0 (0)	11 (12)	45 (50)	34 (38)
Documenting the signs/symptoms of child maltreatment in the patient file is important	0 (0)	1 (1)	7 (8)	21 (23)	61 (68)
Asking the child about injuries he/she had is important	0 (0)	1 (1)	5 (6)	28 (31)	56 (62)
Reporting child maltreatment cases to a legal authority is important	0 (0)	0 (0)	5 (5)	32 (36)	53 (59)
The amount of material presented on the topic of child maltreatment at your medical school was sufficient	29 (32)	22 (24)	23 (26)	10 (11)	6 (7)
Providing child maltreatment training in the workplace is important	3 (3)	2 (2)	8 (9)	37 (41)	40 (44)

The attitude of the participants to child maltreatment is given in Table 3. Most physicians strongly agreed/agreed with the importance of detecting child maltreatment as well as the importance of their own roles in detecting and reporting cases of child physical abuse (98% and 99% respectively). Most (88%) of the participants were confident in their ability to detect cases of child maltreatment if they encountered them. Moreover, 91%, 93% and 94% of respondents, respectively, strongly agreed or agreed that documenting the signs and symptoms of abuse in the patient file, asking the child about injuries he/she had and reporting child abuse cases to a legal authority are important. Finally, more than half (57%) strongly disagreed/disagreed that the amount of material presented on the topic of child abuse and neglect in their medical school was sufficient and 85% strongly agreed/agreed that providing training on child abuse and neglect in the work place was important.

According to the physicians, the main cause of underreporting was the lack of knowledge of the referral procedures 63 (70%), followed by uncertainty about the diagnosis of child maltreatment 42 (46.7%). Few physicians 16 (17.8%) thought that lack of adequate history about the abuse case was a cause of underreporting.

Just over half 46 (51%) of the physicians had suspected at least one case child maltreatment during their work (Table 4). Of these 46 physicians, 30 (65%) had reported at least one case and 16 (35%) had not reported any case of child maltreatment. In total, these physicians had experienced 249 suspected cases of child maltreatment, of which 148 (59%) were confirmed and 89 (36%) were reported. Of the 18/90 (39%) physicians who had suspected child maltreatment but reported that they took no action, 14 (78%) reported that they did not do anything because of their lack of knowledge about referral procedures 12 (67%) said they were uncertain about their diagnosis of child maltreatment, and 12 (67%) were concerned about the possible harm the family might do to the child.

Physicians who reported child maltreatment were significantly more likely to have received formal training on child maltreatment ($P < 0.001$) and to be older ($P = 0.006$). Sex, years of experience, specialty and qualification were not significantly associated with physicians' reporting behaviour (Table 5).

More than half of the participants 50 (56%) said that their workplace did not provide them with procedures to be followed in case of suspected child maltreatment and 24 (27%) did not know if their workplace had such procedures. Two thirds of the physicians (60 (67%)) were not satisfied with their knowledge on child maltreatment and 85 (94%) wanted to improve their knowledge on the topic. More than half of the physicians (53 (59%)) preferred informative booklets as a way to update their knowledge on child maltreatment, 28 (31%) preferred continuing education courses, 28 (31%) preferred self-study and 22 (24%) suggested modifications of the medical curriculum.

Discussion

The results of our study show that the physicians' knowledge about the signs and social indicators of child maltreatment is unsatisfactory as only 11% correctly identified all the signs and 29% correctly answered all the questions on social indicators. Similar results have been reported in other parts of the world (9,14–16).

Burn marks was the most recognized sign (96% of physicians knew this) which in agreement with results reported in Saudi Arabia (16). A large proportion (78%) of our physicians wrongly identified bruises over bony prominences as a sign of child maltreatment, which is similar to dentists in Saudi Arabia (11), Jordan (9) and the United Arab Emirates (17). However, most such paediatric injuries (90%) are in fact unintentional (18) and not a sign of child maltreatment (19).

Suspected cases of child maltreatment should be well documented and reported to the appropriate governmental agency whose role it is to investigate the

Table 4 Distribution of the physicians according to their experience with child maltreatment (n = 90)

Question	Value
Did you ever suspect that a child who came to you professionally had been maltreated? (No. (%))	
Yes	46 (51)
No	44 (49)
How many child maltreatment cases have you ever suspected?	
Range	1–50
Mean (SD)	5.52 (8.02)
Median	3.0
Total number of suspected cases	249
How many child maltreatment cases have you ever diagnosed (confirmed)?	
Range	0.0–30.0
Mean (SD)	3.22 (5.30)
Median	1.0
Total no. diagnosed (% from suspected cases)	148 (59)
Have you ever reported a child maltreatment case that you suspected? (No. (%))^a	
No	16 (35)
Yes	30 (65)
How many cases have you reported?	
Range	0.0–13.0
Mean (SD)	1.93 (2.98)
Median	1.0
Total no. reported (% from suspected cases) (n = 249)	89 (36)
What were your action(s) when you suspected a case of child maltreatment?^a (No. (%))^b	
Asked the child and/or parents	31 (67)
Documented the sign/symptoms and suspicion in child's file	31 (67)
Monitored the case during the following visits	28 (61)
Checked the consistency of parents' and/or child's explanation with the clinical findings	37 (80)
Did not do anything	18 (39)
If you did not do anything, why was that? (n = 18)^a	
Fear of anger from family and parents	6 (33)
Lack of knowledge about referral procedures	14 (78)
Uncertainty about the diagnosis of the case as child maltreatment	12 (67)
Lack of an adequate history about the child maltreatment case	3 (17)
Possible harmful effect on the child from the family	12 (67)

SD= standard deviation.

^aThe respondents who had never suspected a case of child maltreatment (44 physicians) were excluded.^bThe respondents could select more than one answer.

case and help in child protection. Our study found that most of the physicians (88%) thought that reporting to a legal authority was the first action that should be taken with a suspected case of child maltreatment which is higher than reported in dentists in Saudi Arabia (50%) (7). More than half of our physicians (58%) correctly chose the police as the legal authority to which the child maltreatment cases should be reported. In Turkey, physicians reported only to the social services (14). Disappointingly, 17% of our physicians did not know to which legal authority child maltreatment should be reported, which is in agreement a study among dentists (22%) in the United Arab Emirates (17). Not being sure of the authority to which they should report child maltreatment could be because the law of children's

rights in Egypt does not penalize the physicians for not reporting such cases (20).

Two thirds of our participants would report all cases to the authorities even if the abuse was only suspected, which is similar to a study in Turkey (76%) (14). On the other hand, a different opinion was reported in a study of paediatricians in Saudi Arabia, 82% of whom considered that reporting should be mandatory only if serious injuries are suspected (21). This negative attitude may be due to the lack of clear legal and clinical guidelines in Arab countries on reporting suspected cases of child maltreatment.

Only 8% of our participants had received some formal training on child maltreatment, which is only slightly

Table 5 Association between reporting child maltreatment and demographic characteristics and training

Characteristic	Reported child maltreatment		Test of significance (P-value)
	No (n = 60)	Yes (n = 30)	
	No.	No.	
Age (years)			
< 30	48	19	2.920a (0.087)
≥ 30	12	11	
Range	25.0–32.0	26.0–33.0	2.806b (0.006)
Mean (SD)	27.95 (1.79)	29.10 (1.92)	
Sex			
Male	33	13	1.089a (0.297)
Female	27	17	
Years of experience			
≤ 5	28	10	1.795a (0.432)
6–≤ 10	27	18	
> 10	5	2	0.778b (0.439)
Range	3.0–12.0	4.0–10.0	
Mean (SD)	6.07 (1.92)	6.40 (1.90)	
Specialty			
Paediatrics	27	10	1.692a (0.639)
Orthopaedics	10	8	
Emergency room	11	6	
Forensics and toxicology	12	6	
Highest/last scientific degree			3.137a (0.077)
Bachelor degree	45	17	
Master degree	15	13	
Have you ever received formal training on child maltreatment?			
Yes	0	7	15.181a (< 0.001)
No	60	23	

SD=standard deviation.

^aChi-squared test.^bStudent t-test.

P ≤ 0.05 was considered statistically significant.

lower than 11% reported in India (15). Our physicians had relatively limited knowledge of child maltreatment; only 41% had a knowledge score of 75% or more. A study in China also reported insufficient knowledge of health providers about child maltreatment (22). However, the knowledge score in our study is low compared with scores reported in a study in Saudi Arabia with a score of 84.2% (11). This may be due to the difference in specialty of the samples (the Saudi Arabian sample was dentists) and differences in scoring systems.

Older age and longer work experience were significantly associated with better knowledge. However, sex and specialty were not significantly associated with knowledge. A study in Turkey found similar results for age and work experience, but also found that female physicians had better knowledge than males (23).

Despite the limited knowledge, the attitudes expressed in the current study showed strong agreement with the important role of the physicians in the early diagnosis and reporting of child maltreatment and the

value of receiving training on child maltreatment. This finding concurs with many studies in other countries (10,24–27).

Just over half of the physicians in our study had suspected at least one child maltreatment during their work. Higher proportions have been reported in Austria (28). Thus, almost half (49%) said that they had never suspected child maltreatment. Not suspecting child maltreatment does not mean they had not met cases; perhaps they could not identify these cases because of their poor knowledge). One of the main causes of underreporting is lack of knowledge about signs of child abuse or how to suspect the case and this is confirmed by other results in our study. Of the 249 suspected cases reported by the physicians in our study, 59% were confirmed to be child abuse, but only about a third of the cases were reported by the physicians. Underreporting is still a global problem (29,30). Many reasons were mentioned as an explanation for this problem. The main reasons for underreporting given by our participants

were lack of knowledge about referral procedures and unclear reporting steps. These reasons were also reported in studies in Saudi Arabia (16,31). Improvement in reporting can only be expected when physicians are aware of their legal mandate and the proper procedures for reporting.

In agreement with a study in France (32), we found a significant association between reporting child maltreatment cases and physician's age and training. Most of our participants (82%) said they had no clear procedures to follow or were unaware of the available services if they suspected a case of child maltreatment. Similar results were reported in a study in Turkey where 88% of the resident physicians and 78% of the experienced physicians considered that they had inadequate knowledge of the services available to deal with child maltreatment (33).

Although our study covered three hospitals, one of its limitations is that it was restricted to Alexandria, one

of the urban governorates in Egypt. Larger-scale studies, including rural Egypt, where lower levels of knowledge and awareness are expected, would help give a more accurate picture of the situation in Egypt. Another limitation was the relatively low response rate which could be improved if interviewing method was used instead of self-completing the questionnaire.

In conclusion, physicians' knowledge about the signs and social indicators of child maltreatment was unsatisfactory. Most of participants wanted to improve their knowledge on child maltreatment. Physicians in Alexandria are in need of clinical training and education sessions to improve their ability to diagnosis and report cases of child maltreatment and clear procedures to assist them in doing so.

Funding: None.

Competing interests: None declared.

Maltraitance des enfants : connaissances, attitudes et comportements des médecins en matière de signalement dans les hôpitaux universitaires, Alexandrie (Égypte)

Résumé

Contexte : Le défaut de diagnostic et de signalement de la maltraitance des enfants constitue un problème important dans le monde.

Objectifs : La présente étude visait à évaluer les connaissances, l'attitude et la pratique des médecins des hôpitaux universitaires d'Alexandrie en matière de diagnostic et de signalement des cas de maltraitance d'enfants.

Méthodes : Une étude transversale descriptive a été menée dans trois hôpitaux. Tous les médecins travaillant régulièrement dans des services des urgences ont été invités à remplir un questionnaire auto-administré. Les données recueillies incluaient les caractéristiques sociodémographiques, les connaissances et la formation officielle concernant la maltraitance d'enfants, l'attitude face à cette dernière, et l'expérience des cas de maltraitance d'enfants ainsi que le comportement en matière de signalement.

Résultats : Au total, 90 médecins ont été inclus dans l'étude. Seuls 11 % d'entre eux ont correctement identifié tous les signes de maltraitance d'enfants et 29 % ont répondu correctement à toutes les questions sur les indicateurs sociaux de la maltraitance. Seulement 41 % des participants avaient un bon score de connaissances sur la maltraitance des enfants (≥ 75 %). Une expérience professionnelle plus longue ($p = 0,019$) et un âge plus avancé ($p = 0,039$) étaient associés à une meilleure connaissance. Sur les 249 cas suspects de maltraitance d'enfants que les médecins ont déclaré avoir examinés, seuls 36 % avaient fait l'objet d'un signalement. La formation formelle dans le domaine de la maltraitance des enfants ($p < 0,001$) et un âge plus avancé ($p = 0,006$) étaient associés au comportement des médecins en matière de signalement. Plus de la moitié des participants (56 %) estimaient que leur lieu de travail ne mettait pas à leur disposition des procédures à suivre en cas de suspicion de mauvais traitements envers les enfants.

Conclusion : Les médecins n'avaient pas une connaissance suffisante des signes et des indicateurs sociaux de la maltraitance des enfants. Une formation et un enseignement cliniques sont nécessaires pour améliorer leurs capacités de diagnostic et de signalement des cas de maltraitance d'enfants.

إساءة معاملة الطفل: معلومات الأطباء ومواقفهم وسلوكهم في الإبلاغ بالمستشفيات التعليمية، الإسكندرية، مصر

نورهان سعيد، إيمان أنور سلطان، نجلاء سلامة، محمد جلال، مها غانم

الخلاصة:

الخلفية: يُعتبر عدم تشخيص حالات إساءة معاملة الأطفال والإبلاغ عنها من المشكلات المهمة في جميع أنحاء العالم.

الأهداف: هدفت هذه الدراسة إلى تقييم معلومات الأطباء ومواقفهم وممارستهم في المستشفيات التعليمية الجامعية في الإسكندرية بشأن تشخيص حالات إساءة معاملة الأطفال والإبلاغ عنها.

طرق البحث: أجريت دراسة وصفية مقطعية في ثلاثة مستشفيات. ووجهت الدعوة إلى جميع الأطباء الذين يعملون بانتظام في وحدات الطوارئ ملء استبيان يستكمل ذاتياً. وتضمنت البيانات التي جمعت الخصائص الاجتماعية والسكانية، ومعلومات الأطباء عن إساءة معاملة الأطفال وتلقي تدريب رسمي في هذا الشأن، وموقفهم من التعامل مع هذه الحالات، وخبرتهم في حالات إساءة معاملة الأطفال وسلوك إبلاغهم عنها.

النتائج: شملت الدراسة ما مجموعه 90 طبيباً. واستطاع 11٪ منهم فقط تحديد جميع علامات إساءة معاملة الأطفال بشكل صحيح، كما أجاب 29٪ منهم إجابات صحيحة عن جميع الأسئلة التي تدور حول المؤشرات الاجتماعية لإساءة المعاملة. وحصل 41٪ منهم فقط على درجة جيدة بشأن المعلومات عن إساءة معاملة الأطفال ($\leq 75\%$). وارتبط القدر الأفضل من المعلومات بالخبرة العملية الأطول (القيمة الاحتمالية = 0.019) والسن الأكبر (القيمة الاحتمالية = 0.039). ومن بين الحالات المشتبه في كونها حالات إساءة معاملة الأطفال وأبلغ الأطباء أنهم مروا بها، لم يبلغ سوى 36٪ منها فقط. وارتبط التدريب الرسمي بشأن إساءة معاملة الأطفال (القيمة الاحتمالية > 0.001) والسن الأكبر (القيمة الاحتمالية = 0.006) بسلوك الأطباء في الإبلاغ. واعتقد أكثر من نصف المشاركين (56٪) أن مكان عملهم لا يوفر لهم الإجراءات التي يتعين اتباعها عند الاشتباه في حالة من حالات إساءة معاملة للأطفال.

الاستنتاجات: إن معلومات الأطباء عن العلامات والمؤشرات الاجتماعية لحالات إساءة معاملة الأطفال لم تكن مرضية. وهناك حاجة إلى التدريب والتثقيف السريين لتحسين قدرة الأطباء على تشخيص حالات إساءة معاملة الأطفال والإبلاغ عنها.

References

- Diaz A, Petersen AC. Institute of medicine report: new directions in child abuse and neglect research. *JAMA Pediatr.* 2014;168(2):101–2. <https://doi.org/10.1001/jamapediatrics.2013.4560>
- Violence against children. Child maltreatment. Geneva: World Health Organization; 2016 (https://www.who.int/health-topics/violence-against-children#tab=tab_1, accessed 22 September 2020).
- Kunen S, Hume P, Perret JN, Mandry CV, Patterson TR. Under diagnosis of child abuse in emergency departments. *Acad Emerg Med.* 2003;10(5):546. <https://doi.org/10.1197/aemj.10.5.423>
- World report on violence and health. Geneva: World Health Organization; 2002. (https://apps.who.int/iris/bitstream/handle/10665/42495/9241545615_eng.pdf?sequence=1, accessed 9 September 2020).
- Levi BH, Crowell K. Child abuse experts disagree about the threshold for mandated reporting. *Clin Pediatr.* 2011;50(4):321–9. <https://doi.org/10.1177/0009922810389170>
- Fraser JA, Mathews B, Walsh K, Chen L, Dunne M. Factors influencing child abuse and neglect recognition and reporting by nurses: A multivariate analysis. *Int J Nurs Stud.* 2010; 47(2):146–53. <https://doi.org/10.1016/j.ijnurstu.2009.05.015>
- Antai D, Braithwaite P, Clerk G. Social determinants of child abuse: evidence of factors associated with maternal abuse from the Egypt demographic and health survey. *J Inj Violence Res.* 2016;8(1): 25–34. <https://doi.org/10.5249/jivr.v8i1.630>
- Law No. 126 of 2008 for the Child Code [In Arabic]. Cairo: Government of Egypt; 2008 (<http://www.egypt.gov.eg/arabic/laws/>, accessed 22 September 2020).
- Mogaddam M, Kamal I, Merdad L, Alamoudi N. Knowledge, attitudes, and behaviors of dentists regarding child physical abuse in Jeddah, Saudi Arabia. *Child Abuse Negl.* 2016;54(1):43–56. <https://doi.org/10.1016/j.chiabu.2016.02.004>
- Pinto L, Lein A, Mahoque R, Wright DW, Sasser SM, Staton CA. A cross-sectional exploratory study of knowledge, attitudes, and practices of emergency health care providers in the assessment of child maltreatment in Maputo, Mozambique. *BMC Emerg Med.* 2018;18(1):11. <https://doi.org/10.1186/s12873-018-0162-9>
- Al-Dabaan R, Newton JT, Asimakopoulou K. Knowledge, attitudes, and experience of dentists living in Saudi Arabia toward child abuse and neglect. *Saudi Dent J.* 2014;26(3):79–87. <https://doi.org/10.1016/j.sdentj.2014.03.008>
- SPSS for Windows, version 20.0. Armonk, NY: IBM Corporation; 2012.
- Kirkpatrick LA, Feeney BC. A simple guide to IBM-SPSS statistics for version 20.0. Bement, CA: Wadsworth, Cengage Learning; 2013.
- Demirçin S, Tütüncüler A, Aslan F, Güney SV, Atılgan M, Gülkesen H. The knowledge level and opinions of physicians about the medical and legal procedures related to physical child abuse. *Balkan Med J.* 2017;34(2):140–6. <https://doi.org/10.4274/balkan-medj.2015.1195>
- Deshpande A, Macwan C, Poonacha KS, Bargale S, Dhillon S, Porwal P. Knowledge and attitude in regards to physical child abuse amongst medical and dental residents of central Gujarat: A cross-sectional survey. *J Indian Soc Pedod Prev Dent.* 2015;33(3):177. <https://doi.org/10.4103/0970-4388.160344>
- Alsaleem SA, Alsaleem MA, Asiri AM, Alkhidhran SS, Alqahtani WS, Alzahrani MS, et al. Knowledge and attitude regarding child abuse among primary health care physician in Abha, Saudi Arabia, 2018. *J Family Med Prim Care.* 2019;8(2):706. https://doi.org/10.4103/jfmpc.jfmpc_442_18
- Sminkey L. World report on child injury prevention. *Inj Prev.* 2008;14(1):69. <https://doi.org/10.1136/ip.2007.018143>
- Hashim, R, Al-Ani, A. Child physical abuse: assessment of dental students' attitudes and knowledge in United Arab Emirates. *Eur Arch Paediatr Dent.* 2013;14(5):301–5. <https://doi.org/10.1007/s40368-013-0063-2>

19. Ramos-Gomez F, Rothman D, Blain S. Knowledge and attitudes among California dental care providers regarding child abuse and neglect. *J Am Dent Assoc.* 1998;129(3):340–8. <https://doi.org/10.14219/jada.archive.1998.0208>
20. The National Council for Childhood and Motherhood. Law No. 12 of 1996 promulgating the child law amended by law no. 126 of 2008. Cairo: Government of Egypt; 2008 (<http://citizenshiprightsafrika.org/wp-content/uploads/2019/01/Egypt-Child-Law-1996-amended-2008-EN.pdf>, accessed 9 September 2020).
21. Habib HS. Pediatrician knowledge, perception, and experience on child abuse and neglect in Saudi Arabia. *Ann Saudi Med.* 2012;32(3):236–42. <https://doi.org/10.5144/0256-4947.2012.236>
22. Li X, Yue Q, Wang S, Wang H, Jiang J, Gong L, et al. Knowledge, attitudes, and behaviors of healthcare professionals regarding child maltreatment in China. *Child Care Health Dev.* 2017;43(6):869–75. <https://doi.org/10.1111/cch.12503>
23. Kara Ö, Çalışkan D, Suskan E. Comparison of the levels of knowledge and approaches in relation with child abuse and neglect in residents of pediatrics, pediatricians and practitioners working in the province of Ankara. *Türk Pediatri Arş.* 2014;49(1):57. <https://doi.org/10.5152/tpa.2014.984>
24. Andrade EM, Nakamura E, de Paula CS, do Nascimento R, Bordin IA, Martin D. A visão dos profissionais de saúde em relação à violência doméstica contra crianças e adolescentes: um estudo qualitativo [The view of health professionals in relation to domestic violence against children and adolescents: a qualitative study]. *Saúde e Sociedade.* 2011;20(1):147–55.
25. Tansley G, Schuurman N, Amram O, Yanchar N. Spatial access to emergency services in low-and middle-income countries: a GIS-based analysis. *PLoS One.* 2015;10(11):e0141113. <https://doi.org/10.1371/journal.pone.0141113>
26. Laud A, Gizani S, Maragkou S, Welbury R, Papagiannoulis L. Child protection training, experience, and personal views of dentists in the prefecture of Attica, Greece. *Int J Paediatr Dent.* 2013;23(1):64–71. <https://doi.org/10.1111/j.1365-263X.2012.01225.x>
27. Harris CM, Welbury R, Cairns AM. The Scottish dental practitioner's role in managing child abuse and neglect. *Br Dent J.* 2013;214(9):E24. <https://doi.org/10.1038/sj.bdj.2013.435>
28. Kraus C, Jandl-Jager E. Awareness and knowledge of child abuse amongst physicians - a descriptive study by a sample of rural Austria. *Wien Klin Wochenschr.* 2011;123(11–12):340–9. <https://doi.org/10.1007/s00508-011-1579-2>
29. AlMadani O, Bamousa M, Alsaif D, Kharoshah MA, Alsowayigha A. Child physical and sexual abuse in Dammam, Saudi Arabia: a descriptive case-series analysis study. *Egypt J Forensic Sci.* 2012;2:33–7. <https://doi.org/10.1016/j.ejfs.2012.01.001>
30. Eads K. Breaking silence: underreported child abuse in the healthcare setting. *Online J Health Ethics.* 2013;9(1):1. <http://dx.doi.org/10.18785/ojhe.0901.01>
31. Elarousy W, Abed S. Barriers that inhibit reporting suspected cases of child abuse and neglect among nurses in a public hospital, Jeddah, Saudi Arabia. *East Mediterr Health J.* 2019;25(6):413–21 <https://doi.org/10.26719/emhj.18.055>
32. Regnaut O, Jeu-Steenhouwer M, Manaouil C, Gignon M. Risk factors for child abuse: levels of knowledge and difficulties in family medicine. A mixed method study. *BMC Res Notes.* 2015;8:620. <https://doi.org/10.1186/s13104-015-1607-9>
33. Gül H, Yürümez E, Yaylalı FH, Gül A. The perceptions of pediatricians regarding their self-efficacy in child neglect and abuse. *Türk J Pediatr.* 2015;57(5):475–81.

Prevalence and correlates of depressive symptoms in older people in the West Bank, Palestine: cross-sectional study

Manal Badrasawi¹ and Souzan Zidan¹

¹Nutrition and Food Technology Department, Faculty of Agriculture and Veterinary Medicine, An-Najah National University, Nablus, Palestine. (Correspondence to: Manal Badrasawi: manalpharmacist@gmail.com).

Abstract

Background: Depressive disorders in elderly people can affect their cognitive and physical abilities and nutritional status.

Aims: This study aimed to determine the prevalence of depressive disorders in older Palestinians and its relationship with nutritional, functional and cognitive status.

Methods: A cross-sectional study was conducted among Palestinians > 60 years living in Hebron, West Bank from September 2017 to March 2018. An interview-based questionnaire was used to obtain information on sociodemographic characteristics, nutritional habits, anthropometric measurements, cognitive function (using the Montreal cognitive assessment tool), and functional status (using activities of daily living and instrumental activities of daily living scales). The presence of depressive symptoms was determined using the geriatric depression scale: a score ≥ 5 indicated depressive symptoms.

Results: A total of 291 participants were included in the study. Mean age was 70.4 (SD 7.0) years, range 60–100. The prevalence of depressive symptoms was 51.9%. Depression was significantly associated with marital status (being single), low educational and income level, unemployment, and inability to write and make calculations. The presence of depressive disorders was also significantly associated with lower scores on the instrumental activities of daily living scale and the Montreal cognitive assessment tool, and with hypercholesterolaemia, chewing and swallowing difficulties and lack of appetite.

Conclusion: A considerable percentage of older Palestinian adults had depressive symptoms. There is a need to screen and treat depressive symptoms among older Palestinian adults to prevent their progression to severe mental health problems.

Keywords: depression, aged, prevalence, nutritional status, functional status, cognition, Palestine.

Citation: Badrasawi M; Zidan S. Prevalence and correlates of depressive symptoms in older people in the West Bank, Palestine: cross-sectional study. *East Mediterr Health J.* 2021;27(3):260–268. <https://doi.org/10.26719/2021.27.3.260>

Received: 28/11/19; accepted: 15/03/20

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Introduction

Depression affects 7% of the general elderly population (1). The development of depression in older adults may be attributable to a reduction in mental, cognitive and physical abilities, increased probability of death among their friends or loved ones, retirement and loss of communication with people. Symptoms including fatigue, anxiety, insomnia, feelings of hopelessness, permanent sadness, anxiety, low energy, aches and pains, and suicidal thoughts may all be signals of depression in later age (2).

Although depression is the most widespread psychiatric disorder among elderly people, it is usually misdiagnosed and undertreated (3). This could be as a result of the misconception that depression is part of the ageing process rather than a treatable disorder. Depression increases dependence on others and reduces an individual's quality of life. If depression is left untreated, there will be considerable social and clinical effects on the lives of elderly people (4).

Diagnosis of depression in older people is often difficult. The elderly person and his/her family members may deny the possibility of depression and if he/she

has cognitive impairment, eliciting a history may be complicated. Signs and symptoms of depression among elderly individuals are also distinct from depression in other periods of adulthood. The elderly often present with somatic or non-specific symptoms rather than the typical symptoms of depression, such as low energy, fatigue, reduction in physical movements and cognitive deficits (5).

Studies have assessed the link between depression and body weight. However, the findings differ: some studies have reported a positive association (6), some a negative association (7) and some have found no association (8). These findings indicate that not all individuals who are overweight or obese have psychological problems such as depression and there could be specific factors predisposing certain people to depression. For example, sociodemographic factors are possible mediators and moderators of the association between body weight and depression which may explain the inconsistent results.

In the past two decades, life expectancy at birth in Palestine has increased considerably, which has led to an increase in the elderly population. The number of older adults aged more than 60 years in mid-2019 was 257 151

(5% of the population): 169 503 people (6%) in the West Bank and 87 648 (4%) in Gaza Strip (9). This proportion of elderly people in the population is expected to grow even more in the next decade (9).

To our knowledge, no research has been done on depressive disorders in elderly Palestinians. Therefore, the main aim of our study was to screen older Palestinian adults for depressive disorders and to assess the associated risk factors, including nutritional, functional and cognitive status.

Methods

Study design, setting and sample

This was a cross-sectional study of elderly people in Hebron, West Bank. Hebron district consists of the main city of Hebron, two refugee camps and a large number of villages. We randomly selected one camp, two villages – one from the south and one from the north – and three different areas in the city to represent the study population.

We used G power software, version 3.1.9.7 to calculate the sample size based on the percentage of older adults in Palestine (6%), a 5% margin of error and 95% confidence level. The sample size calculated was 280 participants, and assuming a 5% drop-out, the required sample size was 294 participants. We used purposive sampling to select participants. Inclusion criteria were individuals aged 60 years or more who lived in the selected areas and agreed to take part in the study. Exclusion criteria were the presence of acute illness on the day of data collection (as reported by the potential participant) and severe hearing problems that prevented communication with the research team.

After we had selected the areas, the research team contacted the local committee for each place and they helped us to approach the older adults. The committee differed from place to place, for example, for the camps, it was a committee of the refugee affairs department, and for villages, it was the village municipality. The response rate was 94% (very few people did not agree to participate).

Data collection

Our data collection team was composed of five nutritionists trained to take anthropometric measurements and assess body composition, and to do physical function tests. The team collected data from September 2017 to March 2018. It was difficult to collect data from older adults during the winter when the weather was very cold (December–February) so we stopped the data collection if the weather was very cold. In addition, because of the large amount of data collected, we could only assess about 5–7 participants a day. They briefed the participants on the purpose of the study and gave them an information sheet with details about the study. They then interviewed the participants in order to complete the questionnaires.

Instruments

We used a questionnaire to collect data on sociodemographic characteristics, medical history and dietary habits. Items on sociodemographic data included: sex, marital status, educational level, monthly income, working status and living status (living alone or with their family). For medical history, we asked about the self-reported presence of 15 chronic diseases (hypertension, hypercholesterolaemia, diabetes, stroke, osteoarthritis, heart disease, glaucoma, renal disease, asthma, chronic obstructive pulmonary disease, gout, hip fracture, constipation, gastric ulcer and cancer), and on previous surgery, if any (number of surgical operations, types and dates). In addition, the questionnaire included questions on history of falls, how many and where, and if the fall resulted in hospital admission for a fracture. We also asked about smoking status. Dietary habits were self-reported by the participants. Questions included total number of meals a day, main meals and snacks per day, and the time of the last meal and first meal of the day to estimate the period of overnight fasting.

We also assessed nutritional status, mental health, cognitive function and physical function status.

To assess nutritional status, we used the mini nutritional assessment tool which is a reliable, feasible and non-invasive screening test for evaluating of nutritional status in elderly people (10). This questionnaire has 18 different questions, such as experiencing psychological stress or acute disease in the past 3 months, weight loss in the past 3 months, and amount of fluids (e.g. water, juice, coffee, tea and milk) drunk a day. We then classified the participants into three categories: malnutrition (score < 17); at risk of malnutrition (score 17–23); adequate nutrition (score 24–30) (11).

We also assessed nutritional status from anthropometric measurements and dietary habits. The data collection team took weight, height and mid-upper arm circumference measurements according to standard anthropometric procedures (12). We calculated body mass index – weight in kilograms divided by height in metres squared (kg/m^2). We measured the mid upper arm circumference on the right arm using a measuring tape. We defined muscle wasting as mid upper arm circumference < 23 cm for men and < 22 cm for women (12).

Many screening instruments are available to detect depression in elderly people. One of the most commonly used is the 15-item geriatric depression scale. We used the validated Arabic version of this scale as the study instrument because it has been shown to have high sensitivity (83%) and specificity (91%) (10). The scale has 15 short questions (yes/no) on symptoms of depression. One point is assigned to each answer and the cumulative score is rated on a scoring grid. A score of < 5 indicates absence of depression and a score of ≥ 5 indicates a high risk of a depressive disorder (10).

We also used a validated Arabic version of Montreal cognitive assessment – basic, which has an adequate

test-retest reliability, to detect mild cognitive impairment (13). This tool has a sensitivity of 92.3% and specificity of 85.7%. The Montreal cognitive assessment – basic assesses similar cognitive domains as the original instrument: executive function, language, orientation, simple mathematical calculations, conceptual thinking, memory, visual perception, attention and concentration. The questionnaire takes about 15 minutes to complete. It is scored on 30 points: scores ≥ 26 are considered normal, scores < 26 indicate mild cognitive impairment (13).

We assessed physical function with a functional status assessment using the activities of daily living and instrumental activities of daily living. The activity of daily living was assessed using the Katz index scale (14) and instrumental activity of daily living was assessed using the Lawton scale to assess the independence of daily living activity (15).

Statistical analysis

We used SPSS, version 21 to analyse the data. We set a 5% alpha level and 80% power in all of the statistical tests. We calculated the means and the standard deviations (SDs) for continuous variables, and percentages for categorical variables. To assess the categorical variables associated with depressive symptoms, we used the chi-squared test. Marital status and educational level did not fulfil the assumption of chi-squared test so we used the Fisher exact test. We used the independent sample t-test to examine differences in the means of the continuous variables.

Ethical considerations

The study protocol was approved by the Deanship of Scientific Research Ethical Committee at Palestine Polytechnic University committee (reference number (2018\30\كع). We obtained informed written and verbal consent from all participants before data collection.

Results

We approached 350 elderly people, of whom 330 were invited to participate in the study and gave their verbal consent to participate. Of these, 291 were included in the final analysis; 39 participants were excluded because primary data were missing.

Sociodemographic characteristics

Table 1 shows the sociodemographic characteristics of our sample. The mean age of the participants was 70.4 (SD 7.0) years, range 60–100 years. Of the 291 participants, 53.6% were women and 46.3% had a primary school education, while 23.0% had had no formal education. Most of the participants were married (68.3%), were unemployed (60.3%), were living with their family (79.3%) and were non-smokers (62.2%). Most reported that they could read, write, and make calculations with numbers, 67.5%, 62.6% and 60.7%, respectively.

Table 1 Sociodemographic characteristics of older adults according to sex

Variable	Males No. (%)	Females No. (%)	Total No. (%)
Age (years)			
≤ 70	78 (57.8)	88 (56.4)	166 (57.0)
> 70	57 (42.2)	68 (43.6)	125 (43.0)
Marital status			
Single	10 (7.4)	20 (12.9)	30 (10.3)
Married	117 (86.7)	81 (52.3)	198 (68.3)
Divorced	0 (0.0)	3 (1.9)	3 (1.0)
Widowed	8 (5.9)	51 (32.9)	59 (20.3)
Educational level			
Primary	59 (44.4)	74 (48.1)	133 (46.3)
Secondary	28 (21.1)	21 (13.6)	49 (17.1)
Diploma	11 (8.3)	4 (2.6)	15 (5.2)
University	21 (15.8)	3 (1.9)	24 (8.4)
No formal education	14 (10.5)	52 (33.8)	66 (23.0)
Living status			
Living with family	111 (82.2)	119 (76.8)	230 (79.3)
Living alone	24 (17.8)	36 (23.2)	60 (20.7)
Employment status			
Employed	41 (30.4)	11 (7.1)	52 (17.9)
Part-time job	15 (11.1)	16 (10.3)	31 (10.7)
Unemployed	54 (40.0)	121 (78.1)	175 (60.3)
Retired	25 (18.5)	7 (4.5)	32 (11.0)
Monthly income (Israeli shekel)^a			
< 1500	37 (34.6)	60 (47.6)	97 (41.6)
1501–3000	51 (47.7)	48 (38.1)	99 (42.5)
> 3001	19 (17.8)	18 (14.3)	37 (15.9)

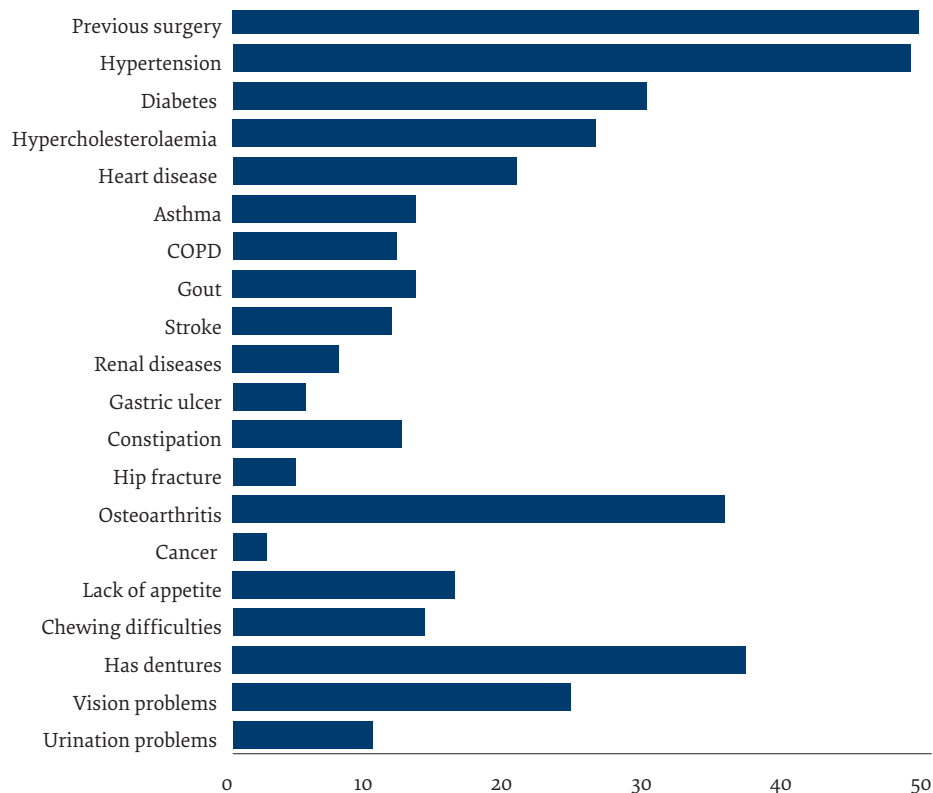
^aUS\$ 1 ≈ 3.5 Israeli shekels.

Medical history

Cardiovascular diseases were prevalent among the participants; nearly half (48.5%) had hypertension, while 35.2% had osteoarthritis, and 29.6% had diabetes (Figure 1). Only 2.4% reported that they had cancer. A large proportion of our participants (36.7%) had dentures, 15.9% lacked an appetite and 13.7% had difficulty chewing.

Nutritional status

Figure 2 shows that a considerable proportion of our sample were overweight (34.4%) and obese (46.0%). According to the mini nutrition assessment, 41.9% (122/291) of the participants were well-nourished, 27.8% (81/291) were at risk of malnutrition and 30.2% (88/291) were malnourished. The mean scores in the mini nutritional assessment tool, indicate that our sample was malnourished, mean score 11.9 (SD 2.1) (Table 2); women had significantly lower mean scores than men, 11.5 (SD 2.3) and 12.4 (SD1.7), respectively ($P < 0.001$).

Figure 1 Medical history of participants

COPD = chronic obstructive pulmonary disease

Functional and cognitive status

Men had a significantly higher mean score for cognitive function than women ($P < 0.001$; Table 2). However, there were no significant differences between men and women for functional status as indicated by the mean scores on the activity of daily living scale and instrumental activity of daily living scale.

Depression and sociodemographic characteristics

The prevalence of depressive disorders in our sample was 51.9% (151/291); of these 48.3% were men and 57.6% were women (Table 3). Depression was significantly associated with marital status (single people were more likely to have depression), lower educational level, being employed, lower income, and being unable to write and make calculations ($P < 0.05$; Table 3). Furthermore, a significantly higher prevalence of depressive symptoms was reported in participants with hypercholesterolemia (64.0% (48/76) compared with participants with normal cholesterol levels (47.9% (103/215); $P < 0.05$). Similarly, 72.5% (29/40) of participants with chewing problems also reported depressive symptoms, while among participants without chewing problems, only 48.8% (122/250) reported depressive symptoms ($P < 0.05$). In addition, 73.9% (34/46) of participants who lacked an appetite had depressive symptoms and while only 47.8% (117/245) of participants with a normal appetite had depressive symptoms was ($P < 0.05$).

Relationship between nutritional, functional, cognitive and dietary status

The mean scores on the instrumental activity of daily living scale were lower in individuals with depressive disorders (5.15 (SD 2.29)) than those without (6.37 (SD 1.89), $P < 0.002$). Furthermore, the scores on the Montreal Cognitive Assessment were significantly lower in individuals with depressive symptoms: (17.10 (SD 4.41)) compared

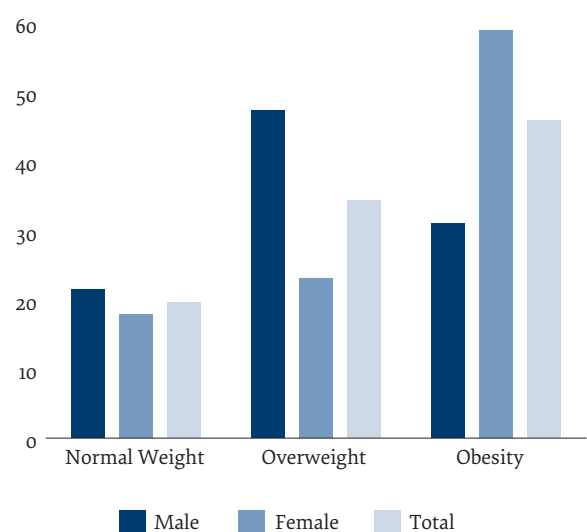
Figure 2 Weight categories of participants based on body mass index, according to sex

Table 2 Cognitive, functional and nutritional status of older adults according to sex

Tool	Total	Males	Females	P-value
	Mean (SD)	Mean (SD)	Mean (SD)	
Montreal cognitive assessment	18.8 (4.9)	20.3 (4.5)	17.6 (4.8)	< 0.001
Activity of daily living	3.7 (2.7)	3.8 (2.7)	3.7 (2.6)	0.93
Instrumental activity of daily living	5.7 (2.2)	5.9 (1.9)	5.5 (2.4)	0.19
Mini nutritional assessment	11.9 (2.1)	12.4 (1.7)	11.5 (2.3)	0.001

Table 3 Sociodemographic characteristics according to depressive disorders

Variable	Without depressive disorders (n = 140)	With depressive disorders (n = 151)	P-value
	No. (%)	No. (%)	
Age (years)			
≤ 70	88 (62.9)	78 (51.7)	0.054
>70	52 (37.1)	73 (48.3)	
Sex			
Male	71 (50.7)	64 (42.4)	0.096
Female	69 (49.3)	87 (57.6)	
Marital status			
Single	5 (3.6)	25 (16.7)	< 0.001
Married	107 (76.4)	91 (60.7)	
Divorced	1 (0.7)	2 (1.3)	
Widowed	27 (19.3)	32 (21.3)	
Education			
Primary	55 (39.9)	78 (52.3)	< 0.001
Secondary	21 (15.2)	28 (18.8)	
Diploma	12 (8.7)	3 (2.0)	
University	22 (15.9)	2 (1.3)	
No formal education	28 (20.3)	38 (25.5)	
Living status			
Living with family	114 (81.4)	116 (77.3)	0.390
Living alone	26 (18.6)	34 (22.7)	
Employment			
Employed	24 (17.1)	28 (18.7)	< 0.001
Part-time job	7 (5.0)	24 (16.0)	
Unemployed	82 (58.6)	93 (62.0)	
Retired	27 (19.3)	5 (3.3)	
Monthly income (Israeli shekel)			
< 1500	30 (28.6)	67 (52.3)	0.018
1501–3000	52 (49.5)	47 (36.7)	
> 3001	23 (21.9)	14 (10.9)	
Able to read			
Yes	100 (71.4)	95 (63.8)	0.164
No	40 (28.6)	54 (36.2)	
Able to write			
Yes	96 (68.6)	85 (57.0)	0.028
No	44 (31.4)	64 (43.0)	
Calculating ability			
Yes	96 (68.6)	80 (53.3)	< 0.001
No	44 (31.4)	70 (46.7)	

Values are missing for some variables.

with those without depressive symptoms (20.74 (SD 4.75); $P < 0.001$). In addition, the number of meals eaten a day was significantly lower in people with depression (2.22 (SD 0.75)) than in people without depression (3.49 (SD 1.20), $P = 0.021$). Furthermore, malnutrition (19.9%) and obesity (52.3%) were more common in participants with depressive disorder ($P < 0.05$), as shown in Table 4.

Discussion

We evaluated the prevalence of depressive disorders in Palestinians > 60 years and its relationship with sociodemographic characteristics, dietary habits, body weight, and functional, cognitive and nutritional status.

The prevalence of depressive disorder was 51.9%. This prevalence is higher than that found in a European population-based study that reported a rate of 17.3% in Ireland, 17.5% in Netherlands, 23.5% in Germany, 19.4% England and 36.5% in Italy (16). A Lebanese study reported a lifetime prevalence of depression of 9.3% among elderly people (17). Differences in the rate of depressive disorders can be attributed to variations in the study methods, and differences in socioeconomic characteristics, cultural background and societal circumstances.

In our study, the prevalence of depression was significantly higher among the elderly respondents who were unemployed. This finding was consistent with a study in Puducherry, India (18). This finding can be explained by the fact that unemployment was linked with low income which in turn was correlated with depression (18).

Furthermore, our study found that the prevalence of depressive disorder in elderly people was significantly correlated with marital status. This result is supported by the Indian study, where the prevalence of depression was significantly higher among single and widowed elderly people (18). In our study, the prevalence of depression was significantly higher among women, which is similar to the Indian study which also found significant difference in the prevalence of depression by sex (18).

Depressive disorder was also significantly more prevalent among those with a low educational level, which

concur with the findings of a study in Malaysia (19). Lower education plays an important role in late-life depressive disorders, which is related to low socioeconomic status. Older adults with a lower education level tend to earn less than their better educated counterparts. Education-related financial issues are risk factors for depression among older adults (20).

In our study, chronic diseases such as hypercholesterolaemia were significantly associated with depressive disorders in our elderly participants. This finding concurs with previous studies where a strong correlation between depression and the presence of hypercholesterolaemia was seen (21,22). Evidence suggests that depression has pathophysiological and behavioural influences on the cardiovascular system. Firstly, depression has been linked to unhealthy lifestyles, including smoking, unhealthy dietary habits, physical inactivity and low adherence to medical regimens, which may in turn increase the risk of hypercholesterolemia (3). Secondly, pathophysiological influences assume that many bioclinical factors, such as psychological, genetic and biochemical factors, may interact with depression and increase the likelihood of the development of cardiovascular diseases and hypercholesterolaemia (23).

We found that depression was significantly associated with a lack of appetite, and swallowing and chewing difficulties. A study in the United States of America also found a significant association between depression and appetite (24). The lack of appetite from depression is often combined with other factors such as widowhood, reduced social networks and a reduction in the variety of food or institutionalization, which are common experiences for older adults (24). Unlike other studies (19,25), our study suggests that depression is not correlated with hypertension and osteoarthritis.

We found a significant association between obesity and depressive symptoms, which was inconsistent with findings from previous studies (26,27). Both studies revealed, the prevalence of depression was lower among obese men and women as compared to those with normal weight. Although one study found a U shaped relationship between BMI and depression among young

Table 4 Nutritional status of participants according to geriatric depressive disorders

Variable	Without depressive disorders (n = 140)	With depressive disorder (n = 151)	P-value
	No. (%)	No. (%)	
BMI category			
Normal weight	25 (17.9)	32 (21.2)	< 0.001
Overweight	60 (42.9)	40 (26.5)	
Obese	55 (39.3)	79 (52.3)	
Mini nutritional assessment category			
Well-nourished	50 (35.7)	72 (47.7)	< 0.0001
Risk of malnutrition	32 (22.9)	49 (32.5)	
Malnourished	58 (41.4)	30 (19.9)	

BMI = body mass index.

adult, the relationship was not significant in older adults, which may be explained by differences between young and elderly people in their interest in body image (26). The significant relationship found in our study may be because of the presence of functional limitations due to obesity, which can adversely affect the quality of life and may increase the depressive symptoms.

We also found a correlation between the geriatric depression scale and the mini nutritional assessment. Depression was significantly more common among elderly people who were at risk of malnutrition. This finding concurs with other studies (28,29). Depression results in decreased food intake and loss of appetite and thus leads to weight loss. Alterations in eating habits and appetite is an important criterion for diagnosis of depression (30). In addition, ageing is associated with atrophic inflammation of the gastrointestinal tract, which in turn results in malabsorption and decrease in appetite, and consequently malnutrition (30).

Functional status was significantly associated with depressive disorders in our sample of elderly people, which is supported by another study (19). The use of assistive devices and environmental alterations can improve functional status via better performance in instrumental activities of daily living, which can minimize the risk of depression (31). It has been reported that the likelihood of depressive disorders in older adults is greater if functional limitations are combined with chronic diseases (32).

Our findings show that depressive disorders in older people have an adverse effect on cognitive function and were associated with a significant decrease in the mean values of total score on the Montreal cognitive assessment. A causal correlation between these two factors is still ambiguous because their prevalence increases with age and few prospective studies have been conducted (33). Some studies have reported that depression does not lead

to cognitive decline (34,35), while others have found that depression is a risk factor for incident dementia (36).

Our study has several limitations. First, as this was a cross-sectional study, no causal relationships can be inferred for the association found between certain variables and depression. Second, the data collected were self-reported. This may lead to misreporting and recall bias because of the nature of the study and the older age of the participants. Third, we did not directly observe dietary patterns which may have an effect on depression. Fourth, the study only included one region in Palestine. Even though Palestine is small country, we have some differences in the lifestyle and social life between the north and south of the country, and it would be of interest to understand if these differences affect the incidence of depression. Nonetheless, our study is the first of its kind to explore the prevalence of depressive disorders among elderly people in Palestine and the associated factors. Future studies should focus on clarifying the causal relationship, consider the age of subjects (e.g. over 75, over 85) and assess nutritional and social status for a better understanding of depression in elderly people.

To conclude, a considerable proportion of elderly Palestinians had depressive disorders. The presence of these disorders was closely related to lower scores on the instrumental activities of daily living, higher scores on the Montreal Cognitive Assessment, chewing difficulties, lack of appetite, swallowing problems and chronic diseases such as hypercholesterolaemia. Primary care providers need to be vigilant in diagnosing and treating depression in elderly patients in order to increase quality of life and prevent mental health deterioration. Our findings can serve as baseline data to develop effective community programmes to assist in the management of common mental health disorders, mainly depression, in older adults.

Funding: None.

Competing interests: None declared.

Prévalence et corrélats des symptômes dépressifs chez les personnes âgées en Cisjordanie (Palestine) : étude transversale

Résumé

Contexte : Les troubles dépressifs chez les personnes âgées peuvent affecter leurs capacités cognitives et physiques ainsi que leur état nutritionnel.

Objectifs : La présente étude visait à déterminer la prévalence des troubles dépressifs chez les Palestiniens âgés et sa relation avec l'état nutritionnel, fonctionnel et cognitif.

Méthodes : Une étude transversale a été menée auprès de Palestiniens âgés de plus de 60 ans vivant à Hébron, en Cisjordanie, de septembre 2017 à mars 2018. Un questionnaire d'entretien a été utilisé pour obtenir des informations sur les caractéristiques sociodémographiques, les habitudes nutritionnelles, les mesures anthropométriques, la fonction cognitive (de l'outil d'évaluation cognitive de Montréal) et le statut fonctionnel (à l'aide des activités de la vie quotidienne et des activités instrumentales des échelles de la vie quotidienne). La présence de symptômes dépressifs a été déterminée à l'aide de l'échelle de dépression gériatrique : un score supérieur ou égal à 5 indique des symptômes dépressifs.

Résultats : Au total, 291 participants ont été inclus dans l'étude. L'âge moyen était de 70,4 ans (écart type 7,0), variant entre 60 et 100 ans. La prévalence des symptômes dépressifs était de 51,9 %. La dépression était associée de manière significative au statut marital (célibat), au faible niveau d'éducation et de revenu, au chômage et à l'incapacité d'écrire et de faire des calculs. La présence de troubles dépressifs était également significativement associée à des scores plus

faibles sur l'échelle des activités instrumentales de la vie quotidienne et l'outil d'évaluation cognitive de Montréal, ainsi qu'à une hypercholestérolémie, des difficultés de mastication et de déglutition et à un manque d'appétit.

Conclusion : Un pourcentage considérable des adultes palestiniens âgés présentaient des symptômes dépressifs. Il est nécessaire de dépister et de traiter les symptômes dépressifs chez ces derniers pour prévenir leur évolution vers des problèmes de santé mentale graves.

معدل انتشار أعراض الاكتئاب بين المسنين في الضفة الغربية، فلسطين والعوامل المرتبطة بذلك: دراسة مقطعية

منال بدرا ساوي، سوزان زيدان

الخلاصة:

الخلفية: يمكن أن تؤثر اضطرابات الاكتئاب لدى المسنين على قدراتهم المعرفية والبدنية وحالتهم التغذوية.

الأهداف: هدفت هذه الدراسة إلى تحديد مدى انتشار اضطرابات الاكتئاب بين الفلسطينيين الأكبر سناً وعلاقة ذلك بالحالة التغذوية والوظيفية المعرفية.

طرق البحث: أجريت دراسة مقطعية بين الفلسطينيين الذين تتجاوز أعمارهم 60 عاماً ويعيشون في مدينة الخليل، بالضفة الغربية في الفترة من سبتمبر/أيلول 2017 إلى مارس/آذار 2018. واستُخدم استبيان قائم على المقابلات للحصول على معلومات حول الخصائص الاجتماعية السكانية، والعادات الغذائية، والقياسات الأنثروبومترية، والوظائف المعرفية (باستخدام أداة مونترال للتقييم المعرفي) والحالة الوظيفية (باستخدام مقياس أنشطة الحياة اليومية ومقياس الأنشطة الأساسية للحياة اليومية). وقد تحدد وجود أعراض الاكتئاب باستخدام مقياس الاكتئاب لكبار السن: إحراز قياس ≤ 5 يُشير إلى وجود أعراض اكتئاب.

النتائج: شملت الدراسة ما مجموعه 291 مشاركاً. وكان متوسط العمر 70.4 (الانحراف المعياري 7.0) عاماً، لأعمار تتراوح بين 60–100 عاماً. وبلغت نسبة انتشار أعراض الاكتئاب 51.9%. وارتبط الاكتئاب ارتباطاً كبيراً بالحالة الزوجية، وانخفاض المستوى التعليمي ومستوى الدخل، والبطالة، وعدم القدرة على الكتابة وإجراء الحسابات. كما ارتبطت أعراض الاكتئاب ارتباطاً كبيراً بالدرجات الأقل على مقياس الأنشطة الأساسية للحياة اليومية وأداة مونترال للتقييم المعرفي، وارتفاع الكوليسترول في الدم، وصعوبات المضغ والبلع، وفقدان الشهية.

الاستنتاجات: توجد أعراض الاكتئاب لدى نسبة كبيرة من البالغين الفلسطينيين الأكبر سناً. وهناك حاجة إلى فحص أعراض الاكتئاب وعلاجها بينهم لمنع تطورها إلى مشاكل صحية نفسية وخيمة.

References

1. Mental health of older adults. Geneva: World Health Organization: 2017 (<http://www.who.int/mediacentre/factsheets/fs381/en/>, accessed 2 November 2019).
2. Allen J. Depression in assisted living. *Geriatr Nurs*. 2015;36(1):78–80. <https://doi.org/10.1016/j.gerinurse.2014.12.005>
3. Radhakrishnan S, Nayeem A. Prevalence of depression among geriatric population in a rural area in Tamilnadu. *Int J Nutr Pharmacol Neurol Dis*. 2013;3(3):309–12. <https://doi.org/10.4103/2231-0738.114880>
4. Rajkumar AP, Thangadurai P, Senthilkumar P, Gayathri K, Prince M, Jacob KS. Nature, prevalence and factors associated with depression among the elderly in a rural south Indian community. *Int Psychogeriatr*. 2009;21(2):372–8. <https://doi.org/10.1017/S1041610209008527>
5. Evans M, Mottram P. Diagnosis of depression in elderly patients. *Adv Psychiatr Treat*. 2000;6(1):49–56. <https://doi.org/10.1192/apt.6.1.49>
6. McCrea RI, Berger YG, King KB. Body mass index and common mental disorders exploring the shape of the association and its moderation by age, gender and education. *Int J Obes*. 2012;36(3):414–21. <https://doi.org/10.1038/ijo.2011.65>
7. Palinkas LA, Wingard DL, Barrett-Connor E. Depressive symptoms in the overweight and obese older adults: a test of the 'jolly fat' hypothesis. *J Psychosom Res*. 1996;40(1):59–66. [https://doi.org/10.1016/0022-3999\(95\)00542-0](https://doi.org/10.1016/0022-3999(95)00542-0)
8. Forman-Hoffman VL, Yankey JW, Hillis SL, Wallace RB, Wolinsky FD. Weight and depressive symptom in older adults: direction of influence? *J Gerontol Soc Sci*. 2007;62(1):43–51. <https://doi.org/10.1093/geronb/62.1.S43>
9. The journey to age equality. Ramallah: Palestinian Central Bureau of Statistics; 2019 (www.pcbs.gov.ps/portals/_pcbs/PressRelease/Press_En_ElderlyE2019.pdf, accessed 3 November 2019).
10. Chaaya M, Sibai A-M, Roueiheb ZE, Chemaitelly H, Chahine LM, Al-Amin H, et al. Validation of the Arabic version of the short Geriatric Depression Scale (GDS-15). *Int Psychogeriatr*. 2008;20(3):571–81. <https://doi.org/10.1017/S1041610208006741>
11. Vellas B, Villars H, Abellan G, Soto ME, Rolland Y, Guigoz Y. Overview of the MNA – its history and challenges. *J Nutr Health Aging*. 2006;10(6):456–65.

12. Lee RD, Nieman DC. Nutritional assessment. New York: McGraw–Hill Higher Education; 2007.
13. Rahman TT, El Gaafary MM. Montreal Cognitive Assessment Arabic version: Reliability and validity prevalence of mild cognitive impairment among elderly attending geriatric clubs in Cairo. *Geriatr Gerontol Int*. 2009;9(1):54–61. <https://doi.org/10.1111/j.1447-0594.2008.00509.x>
14. Hartigan IA. comparative review of the Katz ADL and the Barthel index in assessing the activities of daily living of older people. *Int J Older People Nurs*. 2007;2(3):204–12. <https://doi.org/10.1111/j.1748-3743.2007.00074.x>
15. Lawton MP, Brody EM. Assessment of older people: self-maintaining and instrumental activities of daily living. *Gerontologist*. 1969;9(3):179–86.
16. Richardson RA, Keyes KM, Medina JT, Calvo E. Sociodemographic inequalities in depression among older adults: cross-sectional evidence from 18 countries. *Lancet Psychiatry*. 2020;7(8):673–81. [https://doi.org/10.1016/S2215-0366\(20\)30151-6](https://doi.org/10.1016/S2215-0366(20)30151-6)
17. Karam GE. Geriatric depression: a brief review. *J Med Liban*. 2012;60(4):200–6.
18. Laksham KB, Selvaraj R, Kameshvell C. Depression and its determinants among elderly in selected villages of Puducherry – a community-based cross-sectional study. *J Family Med Prim Care*. 2019;8(1):141. https://doi.org/10.4103/jfmprc.jfmprc_235_18
19. Vanoh D, Shahar S, Yahya HM, Hamid TA. Prevalence and determinants of depressive disorders among community-dwelling older adults: findings from the Towards Useful Aging Study. *Int J Gerontol*. 2016;10(2):81–5. <https://doi.org/10.1016/j.ijge.2016.02.001>
20. Stanley P. Risk factors for depressive illness among elderly GOPD attendees at UPTH. *IOSR J Dent Med Sci*. 2013;5(2):77–86.
21. Tyrovolas S, Lionis C, Zeimbekis A, Bountziouk V, Micheli M, Katsarou A, et al. Increased body mass and depressive symptomatology are associated with hypercholesterolemia, among elderly individuals; results from the MEDIS study. *Lipids Health Dis*. 2009;8(1):10. <https://doi.org/10.1186/1476-511X-8-10>
22. Han KT, Kim SJ. Are serum cholesterol levels associated with cognitive impairment and depression in elderly individuals without dementia? A retrospective cohort study in South Korea. *Int J Geriatr Psychiatry*. 2020 <https://doi.org/10.1002/gps.5410>
23. Eurelings LS, van Dalen JW, Ter Riet G, Moll van Charante EP, Richard E, van Gool WA, et al. Apathy and depressive symptoms in older people and incident myocardial infarction, stroke, and mortality: a systematic review and meta-analysis of individual participant data. *Clin Epidemiol*. 2018;10:363–79. <https://doi.org/10.2147/CLEP.S150915>
24. Engel JH, Siewerdt F, Jackson R, Akobundu U, Wait C, Sahyoun N. Hardiness, depression, and emotional well-being and their association with appetite in older adults. *J Am Geriatr Soc*. 2011;59(3):482–7. <https://doi.org/10.1111/j.1532-5415.2010.03274.x>
25. Hawker GA, Gignac MA, Badley E, Davis AM, French MR, Li Y, et al. A longitudinal study to explain the pain-depression link in older adults with osteoarthritis. *Arthritis Care Res (Hoboken)*. 2010;63(10):1382–90. <https://doi.org/10.1002/acr.20298>
26. Lee JH, Park SK, Ryoo JH, Oh CM, Choi JM, McIntyre RS, et al. U-shaped relationship between depression and body mass index in the Korean adults. *Eur Psychiatry*. 2017;1(45):72–80. <https://doi.org/10.1016/j.eurpsy.2017.05.025>
27. Amini S, Shirali S, Jafarirad S, Ehsani H, Mohseni H, Bargard MS. Are lipid profile, body mass index, waist circumference, and blood pressure of depressed elderly patients different from healthy subjects? *Int J Prev Med*. 2019;10:185. https://doi.org/10.4103/ijpvm.IJPVM_372_17
28. Wei J, Fan L, Zhang Y, Li S, Partridge J, Claytor L, Sulo S. Association between malnutrition and depression among community-dwelling older Chinese adults. *Asia Pac J Public Health*. 2018;30(2):107–17. <https://doi.org/10.1177/1010539518760632>
29. Pérez EC, Lizárraga DCS, Martínez REM. Association between malnutrition and depression in elderly. *Nutr Hosp*. 2014;29(4):901–6. <https://doi.org/10.3305/nh.2014.29.4.7228>
30. Al-Rasheed R, Alrasheedi R, Al Johani R, Alrashidi H, Almainany B, Alshalawi B. Malnutrition in elderly and its relation to depression. *Int J Community Med Public Health*. 2018;5(6):2156–60. <http://doi.org/10.18203/2394-6040.ijcmph20181974>
31. Malhotra R, Chan A, Østbye T. Prevalence and correlates of clinically significant depressive symptoms among elderly people in Sri Lanka: findings from a national survey. *Int Psychogeriatr*. 2009;22(2):227–36. <https://doi.org/10.1017/S1041610209990871>
32. Chong MY, Tsang HY, Chen CS, Tang TC, Chen CC, Yeh TL. Community study of depression in old age in Taiwan: prevalence, life events and socio-demographic correlates. *Br J Psychiatry*. 2001;178(1):29–35. <https://doi.org/10.1192/bjp.178.1.29>
33. Polyakova M, Sonnabend N, Sander C, Mergl R, Schroeter ML, Schroeder J. Prevalence of minor depression in elderly persons with and without mild cognitive impairment: a systematic review. *J Affect Disord*. 2013;152–154:28–38. <https://doi.org/10.1016/j.jad.2013.09.016>
34. Richard E, Reitz C, Honig LH, Schupf N, Tang MX, Manly JJ. Late-life depression, mild cognitive impairment, and dementia. *JAMA Neurol*. 2013;70(3):374–82. <https://doi.org/10.1001/jamaneurol.2013.603>
35. Mirza SS, Ikram MA, Bos D, Mihaescu R, Hofman A, Tiemeier H. Mild cognitive impairment and risk of depression and anxiety: a population-based study. *Alzheimers Dement*. 2017;13(2):130–9. <https://doi.org/10.1016/j.jalz.2016.06.2361>
36. Gao Y, Huang C, Zhao K, Ma L, Qiu X, Zhang L. Depression as a risk factor for dementia and mild cognitive impairment: a meta-analysis of longitudinal studies. *Int J Geriatr Psychiatry*. 2013;28(5):441–9. <https://doi.org/10.1002/gps.3845>

Effect of latitude on seasonal variations of vitamin D and some cardiometabolic risk factors: national food and nutrition surveillance

Bahareh Nikooyeh,¹ Zahra Abdollahi,² Nastaran Shariatzadeh,¹ Ali Kalayi,¹ Maliheh Zahedirad¹ and Tirang Neyestani¹

¹Laboratory of Nutrition Research, National Nutrition and Food Technology Research Institute and Faculty of Nutrition Sciences and Food Technology, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran. (Correspondence to: Tirang Neyestani: tneyestani@nnftri.ac.ir).

²Nutrition Office, Iran Ministry of Health, Treatment and Medical Education, Tehran, Islamic Republic of Iran.

Abstract

Background: Despite a remarkable reduction in the occurrence of many micronutrient deficiencies in most countries, vitamin D deficiency has remained a global problem. Age-adjusted disability-adjusted life years lost due to cardiovascular disease in the Eastern Mediterranean Region, including in the Islamic Republic of Iran, are higher than the global average.

Aims: To assess the effects of latitude and season on vitamin D status in the Iranian population and the association between vitamin D status and certain cardiometabolic risk factors.

Methods: A sample of 1111 participants aged 19–65 years was randomly selected from 6 regions with latitudes ranging from 29° 0' N to 37° 5' N. All anthropometric and biochemical assessments were performed twice a year, summer and winter during 2013 to 2014.

Results: Overall mean 25(OH)D concentration was 26.9 [standard deviation (SD) 17.8] nmol/L in winter and 43.4 (SD 32.9 nmol/L in summer ($P < 0.001$). Poor vitamin D status was noticeable in both seasons (90.1% and 69.2%, respectively). Being male (B, 7.6; 95% CI: 4.3 to 10.8; $P < 0.001$) and living at a latitude higher than 33° were positive predictors, and serum 25(OH)D concentration in winter (B, -0.2; 95% CI: -2.9 to -0.11; $P < 0.001$) was a negative predictor of changes of 25(OH)D concentrations.

Conclusion: We found a high prevalence of suboptimal vitamin D status in Iranian adults throughout the year, irrespective of latitude and season. Improvement of mean circulating 25(OH)D concentrations in the community to 50+ nmol/L through a fortification programme is likely to engender healthy cardiometabolic changes.

Keywords: vitamin D, seasonal variation, cardiometabolic risk factor, latitude

Citation: Nikooyeh B; Abdollahi Z; Shariatzadeh N; Kalay Ai; Zahedirad M; Neyestani T. Effect of latitude on seasonal variations of vitamin D and some cardiometabolic risk factors: national food and nutrition surveillance. *East Mediterr Health J.* 2021;27(3):269-278. <https://doi.org/10.26719/emhj.20.119>

Received: 30/01/19; accepted: 17/02/20

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Introduction

Despite a remarkable reduction in the occurrence of many micronutrient deficiencies in most, if not all, countries, vitamin D deficiency has remained a global nutritional problem (1). The importance of this single nutrient deficiency lies in its association with a wide range of human morbidities including cardiovascular disease (CVD), some types of cancers, autoimmune disorders like multiple sclerosis, diabetes and infectious diseases (2,3).

Vitamin D is synthesized in skin from the conversion of the precursor 7-dehydrocholesterol under the influence of solar ultraviolet (UV) light. Several extrinsic and intrinsic factors, including clothing, latitude, season, time of day, socioeconomic status, age, skin type, use of sunscreen and amount of body fat, are important determinants of coetaneous vitamin D biosynthesis (4). Most common diets do not contain natural sources of vitamin D in appreciable amounts. Direct exposure to sunlight is, therefore, the main natural source (5).

Previous studies have demonstrated a seasonal variation in blood levels of 25(OH)D, with lower concentrations in the late winter and early spring than in summer and early fall (6). In the northern hemisphere,

decreased serum concentrations of 25(OH)D are seen in winter owing to inefficient UVB light. Consequently, from October to March, spending most of the daytime exposed to the sun does not guarantee optimal vitamin D status. The importance of this cold season fall in serum 25(OH)D would be more sizeable when considering that even in summer time, dermal biosynthesis of vitamin D might not be adequate due to such lifestyle factors as using sunscreens, reduced outdoor activity and abstinence of sun exposure due to fear of its potential health hazards (7).

Recently it has been reported that age-adjusted disability-adjusted life years due to CVD in the Eastern Mediterranean Region are higher than global average (8) and the Islamic Republic of Iran is no exception (9). Most of risk factors of CVD are modifiable and it has been estimated that by reducing CVD risk factors, some 100 million lives could be saved globally (10). Evidence obtained from prospective cohort studies indicates an increased risk of CVD in people with hypovitaminosis D as compared with those with sufficient status of vitamin D (11). Association between blood concentration of 25(OH)D and some cardiometabolic risk factors including obesity, hypertension, dyslipidaemia and inflammatory

cytokines may suggest an explanation for the effect of vitamin D status on the development of CVD (12).

The prevalence of poor vitamin D status in the Islamic Republic of Iran, on the other hand, is alarming enough for the stakeholders to take an urgent action (13). Although the supplementation programme for school children and pregnant women has been implemented since a few years ago, several subpopulations including adults remained out of coverage umbrella. Sustainability of supplementation is another challenging issue. As a result, policy-makers at the Ministry of Health started evaluating different aspects of mass fortification of a staple food. To do this, some initial data were needed such as:

- Is vitamin D status affected by latitude, i.e. how does the prevalence of hypovitaminosis D vary in different latitudes?
- Is there a seasonal variation in vitamin D status?
- If yes, what is the range of circulating calcidiol concentration in different latitudes and overall?
- Is there any association between vitamin D status and certain cardiometabolic risk factors?

The answer to the last question was especially important as it implied the contribution of the vitamin D fortification programme in reducing the burden of CVD and probably many other related diseases.

To answer these questions, we longitudinally studied a sample of adult volunteers across a broad latitudinal range in the Islamic Republic of Iran.

Methods

Participants

The participants were part of the National Food and Nutrition Surveillance programme, a population-based study conducted during 2013–2014 by the Ministry of Health and the National Nutrition and Food Technology Research Institute and supported by UNICEF to examine and monitor the nutritional status of the Iranian population. This programme used a 2-stage cluster sampling design: there were 1683 clusters in West Azarbaijan, 1703 in Khoozestan, 1209 in South Khorasan, 1343 in Semnan, 1645 in Fars and 14 212 in Lorestan. From each province, 12 clusters were selected randomly using probability-proportional-to-size, based on the population data from the 2012 census. After the selection of clusters, 20 households were chosen per cluster. All eligible people in the selected households were included in the programme. A sample of 1111 adults aged 19–65 years from both sexes were randomly selected from 6 regions of the country at different latitudes: West Azarbaijan (37.5° N, 45.0° E), Semnan (35.5° N, 53.3° E), Lorestan (33.4° N, 48.3° E), South Khorasan (32.8° N, 59.2° E), Khoozestan (31.3° N, 48.6° E) and Fars (29.6° N, 52.5° E).

The exclusion criteria were: intake of vitamin D or omega-3 supplements within the past 3 months; use of medications that could potentially influence vitamin

D metabolism within the past 3 months; any other concomitant clinical disease that could influence vitamin D metabolism (e.g. renal, hepatic, other endocrine disorders). The assessments of participants were done twice a year: summer (August–September) and winter (February–March) during 2013–2014.

Questionnaire

A general questionnaire comprising demographic data and sun exposure habits was completed for all participants via face-to face-interview carried out in the clinic by health workers; the average duration of the interview was 10–15 minutes. Sun exposure habits were evaluated based on duration of outdoor activity in a typical day and the usual time of outdoor activity (10.00 to 15.00, i.e. peak UV period in the day, and other times of day) (14). These questions were itemized in the questionnaire so that the duration of exposure (< 10 mins, 10–59 mins, 60–120 mins and > 120 mins) as well as time of exposure (before 10.00, 10.00–15.00 and after 15.00) were specified by a checkmark in the relevant checkbox. However, in this study, the duration of exposure was divided into 2 categories, < 1 and ≥ 1 hr/day.

Anthropometry

Weight and height were measured by using a digital scale to the nearest 0.1 kg and a stadiometer to the nearest 0.1 cm. Body mass index (BMI) was calculated as weight (kg)/height (m)². Overweight and obesity were categorized as BMI 25–30 and > 30 kg/m², respectively (15).

Blood sampling and handling

Blood samples were drawn in early morning following an overnight fast (12–14 hr). After 30–60 minutes at room temperature, sera were immediately recovered, aliquoted and stored at –80 °C until the day of analysis.

Biochemical analyses

Blood lipids: components of blood lipid profile [triglycerides (TG), total cholesterol (TC), low-density lipoprotein-cholesterol (LDL-C) and high-density lipoprotein-cholesterol (HDL-C)] were determined using commercial enzyme kits (Pars-Azmoon, Tehran, Islamic Republic of Iran) and an autoanalyser (Selecta E, Vitalab, Holliston, Netherlands).

Serum 25(OH)D: Serum concentrations of 25(OH)D, calcidiol, were measured using a direct enzyme immunoassay (EIA, Diasource, Louvain-la-Neuve, Belgium). The EIA 25 (OH)D assay results were checked by high performance liquid chromatography to minimize between-method variation (16). The Laboratory of Nutrition Research has been participating in the Vitamin D External Quality Assessment Scheme (DEQAS) since 2008 and achieved the performance targets set by DEQAS.

In this study, vitamin D status was defined according to serum 25(OH)D concentrations as: deficiency < 25 nmol/L, insufficiency 25–50 nmol/L and sufficiency > 50 nmol/L (3).

The combination of above normal BMI ($> 25 \text{ kg/m}^2$), suboptimal HDL-C concentration ($< 40 \text{ mg/dL}$ in males and $< 50 \text{ mg/dL}$ in females) and high serum TG concentration ($> 150 \text{ mg/dL}$) was defined as a cardiometabolic risk factor (CMRF) (17).

Statistical analyses

Mean and standard deviation were used to summarize continuous variables and frequencies were used for categorical variables. The Shapiro–Wilk test was used to check normality of distribution. Tests for differences in the continuous variables among latitudes were performed using analysis of variance (ANOVA) or Kruskal–Wallis. Significant associations for categorical analyses were determined by chi-squared. The comparisons for changes in variables between the 2 seasons were made using the *t*-test for paired data or Wilcoxon's test, as appropriate. The effects of latitude ($\geq 33^\circ$ vs $< 33^\circ$) and sex on changes in 25(OH)D between summer and winter were examined using 2-way ANOVA. We also used 2-way multivariate ANOVA to assess the effect of latitude and sex on the combined changes in BMI and lipid profile variables. Pearson's correlation coefficient and multiple linear and logistic regression analyses were used to assess relationships between variables. Results were considered statistically significant at $P < 0.05$. Statistical analyses were performed using SPSS, version 21.0.

Results

Characteristics of the study population

The distribution of serum 25(OH)D, lipid profile and duration of sun exposure among the study sample according to sex and seasons are presented in Table 1. At the

beginning of the study, the mean age of participants was 38.8 [standard deviation (SD) 8.1] years. No statistically significant difference was found for mean age between males and females [males: 39.1 (SD 7.9) years ($n = 497$); females: 38.5 (SD 8.2) years ($n = 614$) ($P = 0.200$)].

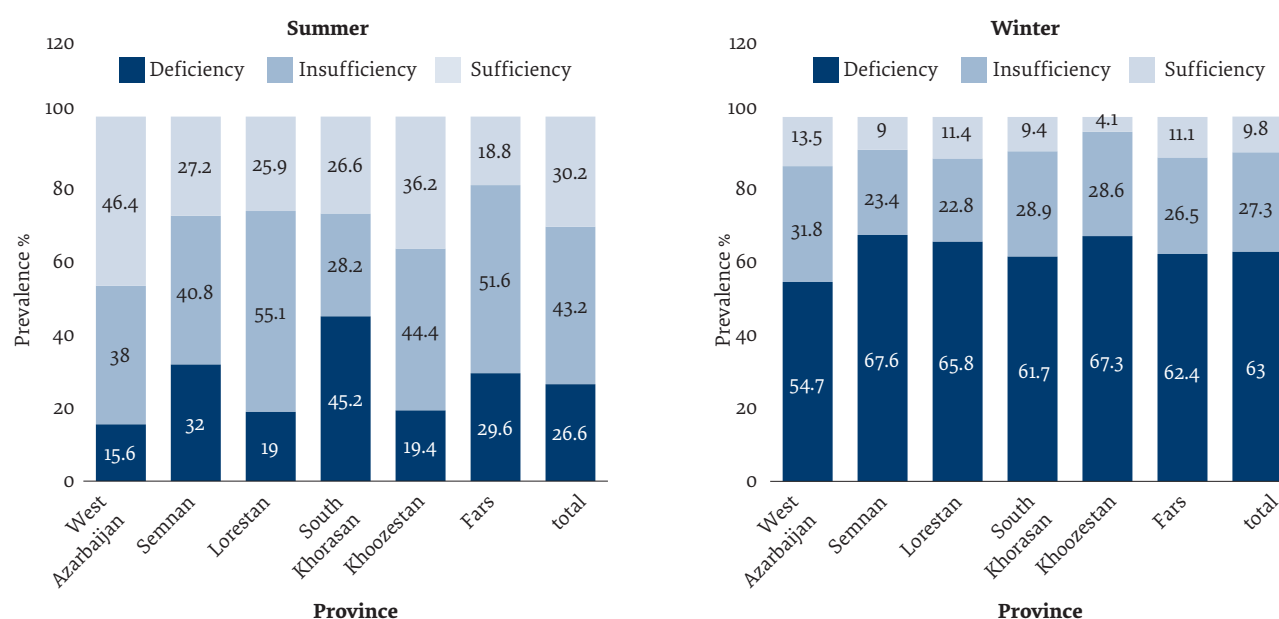
Vitamin D status and seasonal variation

The overall mean 25(OH)D concentration was 26.9 (SD 17.8) nmol/L in winter and 43.4 (SD 32.9) nmol/L in summer ($P < 0.001$). Only in summer was there a statistically significant difference in the 25(OH)D concentration among latitudes with the lowest mean in Semnan and the highest in West Azarbaijan ($P < 0.001$) (Figure 1). For all latitudes, the occurrence of poor vitamin D status was remarkable in both seasons. Thus, in winter 90.1% of participants and in summer 69.2% had serum 25(OH)D concentrations below 50 nmol/L. Using serum 25(OH)D concentrations below 75 nmol/L to describe undesirable vitamin D status, only 3.4% of the participants had sufficient status in winter and only 10.6% in summer.

About 23% of those with hypovitaminosis D ($< 50 \text{ nmol/L}$) in winter were in the sufficient category ($> 50 \text{ nmol/L}$) in summer. Prevalence of hypovitaminosis D showed a significant association with latitude only in summer, thus, people who resided in regions at latitude $< 33^\circ \text{ N}$ had statistically significantly lower 25(OH)D concentrations compared with those living at $\geq 33^\circ \text{ N}$ latitude ($P = 0.010$) (Table 2).

In winter, the range of circulating concentrations of 25(OH)D was from 24.5 (SD 14.7) nmol/L in Semnan, 35.5° N with a cold semi-desert climate, to 29.5 (SD 20.7) nmol/L in West Azarbaijan, 37° N with a Mediterranean climate and spring rains. However, the difference between these values was not statistically significant

Figure 1 Prevalence of vitamin D deficiency among adults in six provinces of the Islamic Republic of Iran in summer and winter



No. of participants is indicated within the bars; deficiency: $\leq 25 \text{ nmol/L}$, insufficiency: $26\text{--}50 \text{ nmol/L}$, sufficiency: $\geq 50 \text{ nmol/L}$

Table 2 Prevalence of vitamin D deficiency, insufficiency, and sufficiency by latitude and seasons

Vitamin D status	Latitude of residence					
	Lower than 33°		33° and higher		All	
	summer	winter	summer	winter	summer	winter
Deficiency	184 (30.9)	384 (63.8)	107 (21.5)	307 (62.0)	291 (26.6)	691 (63.0)
Insufficiency	252 (42.3)	168 (27.9)	220 (44.3)	131 (26.5)	472 (43.2)	299 (27.3)
Sufficiency	160 (26.8)	50 (8.3)	170 (34.2)	57 (11.5)	330 (30.2)	109 (9.7)

P < 0.001 for all latitude categories.

The predefined CMRF was found in 4.1% of the participants in winter and 2.7% in summer. In winter, 36.4% of participants had at least 3 components of CMRF. However, this decreased to 26.0% in summer. In summer, the proportion of participants who had ≥ 3 components of CMRF was higher among those with serum 25(OH) D < 50 nmol/L than among those with serum calcidiol concentrations ≥ 50 nmol/L (29.5% vs 18.5%; *P* < 0.001).

Associations and predictors of 25-hydroxyvitamin D concentration

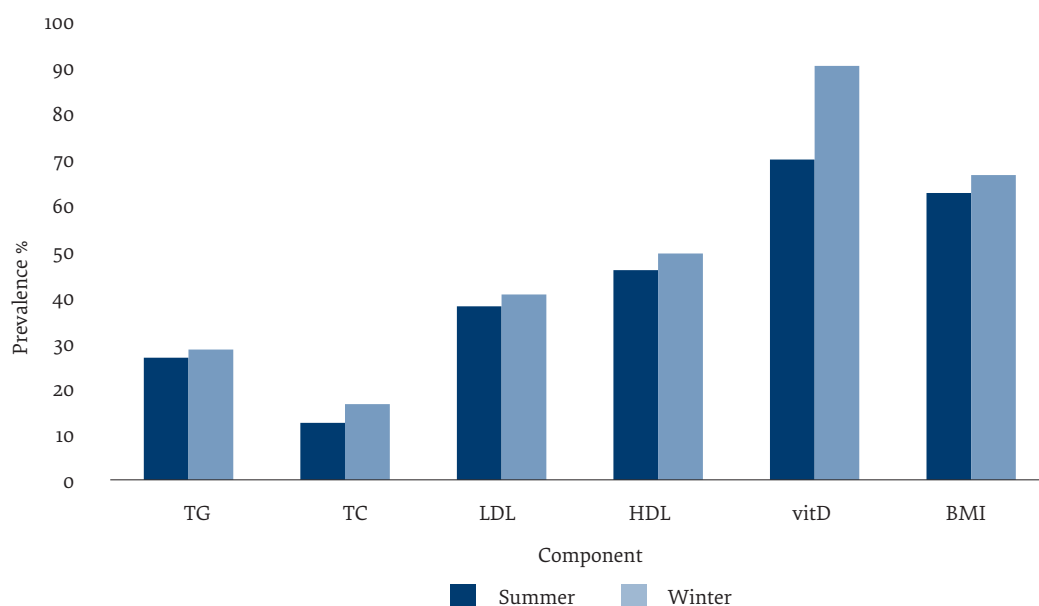
Serum 25(OH)D was negatively associated with BMI in both winter and summer but only in summer was this association statistically significant (*r* = -0.052; *P* = 0.086 vs *r* = -0.092; *P* = 0.002, respectively).

There were weak but significant inverse correlations between seasonal changes in serum concentrations of 25(OH)D and those of BMI (*r* = -0.088; *P* = 0.004), TG (*r* = -0.095; *P* = 0.002), TC (*r* = -0.130; *P* < 0.001) and LDL-C (*r* = -0.097; *P* = 0.002). Summer rise in serum 25(OH)D did not differ between normal weight and overweight/obese people [16.2 (SD 25.3) vs 15.1 (SD 28.6) nmol/L; *P* = 0.533].

In multiple regression analysis, the most important predictors of serum 25(OH)D concentration in winter were 25(OH)D level in summer (*B* = 0.3, 95% CI: 0.2 to 0.3; *P* < 0.001), age (*B* = 0.2; 95% CI: 0.1 to 0.3; *P* = 0.001) and daily sun exposure between 10.00 and 15.00 (*B* = 2.3; 95% CI: 0.4 to 4.1; *P* = 0.017). Sex, duration of sun exposure and BMI did not remain in the final model.

Two-way ANOVA revealed that changes in 25(OH)D were significantly associated with both latitude and sex (*P* < 0.001 for both). No significant interaction between latitude and sex was found (*P* = 0.193). The logistic regression model (vitamin D status as dependent variable and BMI categories and sun exposure status as independent variables) after adjusting for age and sex, showed that in summer, odds of undesirable vitamin D status was 33% greater in people with BMI > 25 compared with normal weight participants (OR: 1.33, 95% CI: 1.02 to 1.7; *P* = 0.035) and 39% less in those with ≥ 1 hour a day solar exposure than those with < 1 hour exposure (OR: 0.61, 95% CI: 0.47 to 0.84; *P* < 0.001).

To determine the predictors of changes of 25(OH)D concentration in more detail, we carried out multivariate analyses. Being male (*B*, 7.6; 95% CI: 4.3 to 10.8; *P*

Figure 2 Prevalence of undesirable status of variables by seasons

TG = triglycerides, TC = total cholesterol, LDL = low-density lipoprotein, HDL = high-density lipoprotein, vitD = vitamin D, BMI = body mass index; No. of participants is indicated above the bars

< 0.001) and living in an area at latitude higher than 33 °N (B, 3.8; 95% 95% CI: 0.5 to 7.0; $P = 0.020$) were positive predictors. Serum 25(OH)D concentration in winter (B, -0.2; 95% 95% CI: -2.9 to -0.11; $P < 0.001$) was a negative predictor of changes of 25(OH)D concentrations.

Discussion

To our knowledge, this is the first reported study of seasonality in the vitamin D status of adults in a broad latitudinal range and its relation to CMRF in the Islamic Republic of Iran. Our findings showed a widespread prevalence of hypovitaminosis D in both sexes residing in latitudes 29–37 °N, all year round. Despite a high prevalence of sub-desirable vitamin D status in both winter and summer and irrespective of latitude, there was a seasonal variation in concentration of circulating calcidiol.

Seasonal changes of circulating calcidiol concentrations have already been reported from many regions around the world including North Greenland with long winters and high solar zenith angle during summer (18,19). A study of adolescent girls from Finland reported that mean 25(OH)D concentrations were highest in September (59.5 (SD 13.4) nmol/L) and lowest in February (37.3 (SD 15.5) nmol/L) (20). A study from Estonia (latitude 59 °N) also reported that the mean 25(OH)D in winter was 43.7 (SD 15.0) nmol/L, with only a third of the Estonian population showing sufficient vitamin D levels. A statistically significant increase in 25(OH)D concentration was observed in summer to 59.3 (SD 18.0) nmol/L (18). This variation may be accompanied by associated changes in other health-related variables such as inflammatory biomarkers (21) and thyroid stimulating hormone (22). Even the outcome of communicable disease may somehow be influenced by this seasonal changes in concentrations of circulating calcitriol (23).

We found that exposure to sun for more than 1 hour per typical summer day was a predictor for sufficient vitamin D status. Nevertheless, in multiple linear regression, variation in sun exposure was a predictor of 25(OH)D concentration only in males not in females, who are mostly veiled in the Islamic Republic of Iran. We also found that suboptimal vitamin D status was common, even among people residing in a sunny climate like Khoozestan (31.3 °N, 48.6 °E) and Fars (29.6 °N, 52.5 °E). It is possibly due to “sunshine getaway” behaviour of people in those provinces due to hot weather at most times of the year. Hence, it seems that living in a sunny climate might be unconnected with the prevalence of hypovitaminosis D.

Latitude affected 25(OH)D concentrations were mainly observed in summer months, during which vitamin D status was better in provinces located above 33 °N. The associations observed between latitude and vitamin D status have differed among studies. A meta-analysis of 394 studies demonstrated a significant decline in 25(OH)D concentrations with increasing latitude only in healthy white subjects but not in other ethnicities (24). It seems diversities in living conditions, including

outdoor activities, clothing, sun-seeking behaviours and vitamin D intake (diet, fortified foods, supplements), can outweigh the effect of latitude (1).

We found a significant association between the changes in 25(OH)D levels and those of certain CMRF including BMI. However, the seasonal variation in serum 25(OH)D concentrations did not differ between normal weight people and overweight/obese people. The association of circulating 25(OH)D concentrations and CMRF has been already reported by some recent studies (25–27). Data from NHANES revealed that serum 25(OH)D concentrations and percentage of body fat or BMI were negatively related (28). Recently it was reported that serum calcidiol concentrations below 50 nmol/L were associated with death from cardiometabolic factors in both normal weight and obese people (25). The Framingham study revealed that vitamin D status was associated with subcutaneous as well as visceral adiposity (29). A meta-analysis reported that the desirable serum 25(OH)D concentrations were associated with 43% reduction in cardiometabolic diseases, with a remarkable decrease in the occurrence of metabolic syndrome, type 2 diabetes and CVD, especially in the middle-aged and the elderly (30). However, another meta-analysis study conducted at almost the same time did not reach the same conclusion (31).

We found the serum 25(OH)D concentrations above 50 nmol/L may be associated with healthy changes in CMRF. However, another study proposed that the protective effects of vitamin D against cardiometabolic outcomes appear in serum 25(OH)D concentrations above 27.5–35 nmol/L (32), concentrations considered as insufficient.

Of very special interest was the concomitant seasonality of vitamin D status and CMRF. We found that physiological elevation in circulating 25(OH)D during summer was negatively paralleled by changes in serum concentrations of TG, LDL-C, TC and BMI. Seasonal changes in serum lipid profile (33) and glycaemic markers (34) have already been documented. Our findings boost the possibility of healthy changes of CMRF due to summer improvement in vitamin D status.

Despite there being several studies on the relationship between vitamin D and CVD, understanding of the connection is still lacking. Recent evidence suggests some pathways for the beneficial effect of vitamin D on the cardiovascular system, including decrease in renin–angiotensin–aldosterone system activity and antihypertensive, antiinflammatory, antiproliferative, antihypertrophic, and antithrombotic effects. It has also been shown that vitamin D may modify lipid profiles via increasing the activity of lipoprotein lipase in adipose tissue (35). Although some human studies have reported the beneficial effects of vitamin D on blood lipids and lipoproteins (36,37), the current evidence is still insufficient and further well-designed studies are warranted (38,39).

Vitamin D seems to play a role in modulating adipogenesis by inhibiting such critical molecular components as peroxisome proliferator-activated receptor gamma 2 (PPAR- γ 2). Therefore, undesirable vitamin D status may cause additional differentiation of pre-adipocytes to adipocytes (40). Animal studies have reported the function of the vitamin in energy regulation (41). However, there is limited evidence to support this role in humans (42).

Some limitations of this study are acknowledged. We were not able to measure sun exposure directly. The sun exposure habits questionnaire was not validated in our country. However, we used this questionnaire in our previous studies with consistent results (3,43). Additionally, actual intake of vitamin D from foods was not measured. However, previous studies have revealed

that the typical Iranian diet is limited in natural sources of vitamin D (3).

Conclusion

In conclusion, we found firstly a high prevalence of sub-optimal vitamin D status in Iranian adults throughout the year, irrespective of latitude and despite significant increase in circulating 25 (OH)D concentrations in the warm season. Secondly, the summer increase in vitamin D status offered healthy changes in CMRF. Therefore, improvement in mean circulating 25(OH) concentration in the community to ≥ 50 nmol/L throughout the year via a national mass fortification programme is likely to bring about some healthy cardiometabolic changes. The expected increase in 25 (OH)D due to consumption of fortified foods and drinks has been already evaluated (3,43,44).

Acknowledgement

All laboratory bench work was performed at the Laboratory of Nutrition Research in the National Nutrition and Food Technology Research Institute. We wish to thank all participants for taking part in this project. We also appreciate our provincial contributors, their teams and the provincial deputies of health for their assistance, especially Somayeh Asghari, Fariba Babai, Fariborz Bojdi, Mostafa Hosseini, Razieh Shenavar, Mahnoosh Sahebdel, Ma'asoomah Moradi and Sakineh Noori.

Funding: The National Food and Nutrition Surveillance programme is financially supported by UNICEF, the Community Nutrition Office of the Iranian Ministry of Health, and the National Nutrition and Food Technology Research Institute.

Competing interests: None declared.

Effet de la latitude sur les variations saisonnières de la vitamine D et certains facteurs de risque cardiométaboliques : surveillance nationale de l'alimentation et de la nutrition

Résumé

Contexte : Malgré une réduction remarquable de la survenue de nombreuses carences en micronutriments dans la plupart des pays, la carence en vitamine D demeure un problème mondial. Les années de vie corrigées de l'incapacité standardisées en fonction de l'âge perdues du fait de maladies cardio-vasculaires dans la Région de la Méditerranée orientale, y compris en République islamique d'Iran, sont plus élevées que la moyenne mondiale.

Objectifs : Évaluer les effets de la latitude et de la saison sur le bilan vitaminique D dans la population iranienne et l'association entre ce bilan et certains facteurs de risque cardiométaboliques.

Méthodes : Un échantillon de 1111 participants âgés de 19 à 65 ans a été sélectionné de façon aléatoire dans six régions ayant des latitudes comprises entre 29,0° N et 37,5° N. Toutes les évaluations anthropométriques et biochimiques ont été réalisées deux fois par an, en été et en hiver, entre 2013 et 2014.

Résultats : La concentration générale moyenne en 25(OH)D était de 26,9 nmol/l en hiver [écart type (ET) 17,8] et 43,4 nmol/l (ET 32,9) en été ($p < 0,001$). Un mauvais bilan vitaminique D a été observé au cours des deux saisons (90,1 % et 69,2 %, respectivement). Le fait d'être un homme ($B : 7,6$; IC à 95 % : 4,3 à 10,8 ; $p < 0,001$) et de vivre à une latitude supérieure à 33 degrés représentaient des facteurs prédictifs positifs, et la concentration sérique en 25(OH)D en hiver ($B : -0,2$; IC à 95 % : $-2,9$ à $-0,11$ $p < 0,001$) était un facteur prédictif négatif des changements des concentrations en 25(OH)D.

Conclusion : Nous avons constaté une forte prévalence du bilan vitaminique D sous-optimal chez les adultes iraniens tout au long de l'année, indépendamment de la latitude et de la saison. L'amélioration des concentrations circulantes moyennes en 25(OH)D dans la communauté à plus de 50 nmol/l grâce à un programme d'enrichissement est susceptible d'engendrer des changements cardiométaboliques favorables à la santé.

تأثير خط العرض على التباينات الموسمية لفيتامين (د) وبعض عوامل خطر الأيض القلبي: الترصد الوطني للأغذية والتغذية

بهاريغ نيقويا، زهرة عبد الله، ناستاران شريعة زادة، علي كالاي، مليحة زاهديارد، تيرانج نايستاني

الخلاصة:

الخلفية: على الرغم من الانخفاض الملحوظ في معدل حدوث العديد من حالات نقص المغذيات الدقيقة في أغلب البلدان، إلا أن نقص فيتامين (د) لا يزال يمثل مشكلة عالمية. وتُعتبر سنوات العمر المصححة باحتساب مدد الإعاقة حسب العمر بسبب أمراض القلب والأوعية الدموية في إقليم شرق المتوسط أعلى من المتوسط العالمي، كما هو الحال في إيران على سبيل المثال.

الأهداف: هدفت هذه الدراسة إلى تقييم آثار خط العرض والموسم على حالة فيتامين (د) لدى السكان الإيرانيين، والعلاقة بين حالة فيتامين (د) وبعض عوامل خطر الأيض القلبي.

طرق البحث: اختيرت عينة من 1111 مشاركاً تتراوح أعمارهم بين 19-65 عاماً بشكل عشوائي من 6 مناطق تتراوح خطوط العرض بها من 29° شمال إلى 37.5° شمال. وأجريت جميع التقييمات الأنثروبومترية والبيوكيميائية مرتين في العام، صيفاً وشتاءً، خلال الفترة من عام 2013 إلى عام 2014.

النتائج: كان متوسط تركيز 25-هيدروكسي فيتامين د بشكل عام 26.9 (الانحراف المعياري 17.8 نانو مول/لتر) في الشتاء و 43.4 (الانحراف المعياري 32.9 نانو مول/لتر) في الصيف (القيمة الاحتمالية > 0.001) وقد لوحظ سوء حالة فيتامين (د) في كلا الموسمين (0.1/90.1% و 0.2/69.2% على التوالي). وتضمنت العوامل المنبئة الإيجابية كون الشخص ذكراً (B، 7.6؛ 95% فاصل الثقة: 4.3 إلى 10.8؛ الاحتمالية > 0.001) ويعيش عند خط عرض أعلى من 33°، بينما كان تركيز مصل 25-هيدروكسي فيتامين د في الشتاء من العوامل المنبئة السلبية لتغيير تركيزات مصل 25-هيدروكسي فيتامين د (B، 0.2-؛ 95% فاصل الثقة: 2.9- إلى 0.11-؛ القيمة الاحتمالية > 0.001).

الاستنتاجات: اكتشفنا ارتفاع انتشار حالة فيتامين (د) دون المستوى الأمثل بين البالغين الإيرانيين طوال العام، بغض النظر عن خط العرض والموسم. ومن المرجح أن يؤدي تحسين متوسط توزيع تركيزات مصل 25-هيدروكسي فيتامين (د) في المجتمع المحلي لتصل إلى +50 نانو مول/لتر من خلال برنامج إغناء الغذاء إلى إحداث تغييرات صحية في الأيض القلبي الصحي.

References

1. Mithal A, Wahl DA, Bonjour JP, Burckhardt P, Dawson-Hughes B, Eisman JA, et al. Global vitamin D status and determinants of hypovitaminosis D. *Osteoporos Int*. 2009 Nov;20(11):1807–20. doi:10.1007/s00198-009-0954-6
2. Holick MF. Vitamin D: importance in the prevention of cancers, type 1 diabetes, heart disease, and osteoporosis. *Am J Clin Nutr*. 2004 Mar;79(3):362–71. doi:10.1093/ajcn/79.3.362
3. Nikooyeh B, Neyestani TR, Farvid M, Alavi-Majd H, Houshiarrad A, Kalayi A, et al. Daily consumption of vitamin D- or vitamin D + calcium-fortified yogurt drink improved glycemic control in patients with type 2 diabetes: a randomized clinical trial. *Am J Clin Nutr*. 2011 Apr;93(4):764–71. doi:10.3945/ajcn.110.007336
4. Webb AR. Who, what, where and when—influences on cutaneous vitamin D synthesis. *Prog Biophys Mol Biol*. 2006;92(1):17–25. doi:10.1016/j.pbiomolbio.2006.02.004
5. Holick MF. Vitamin D: a D-Lightful health perspective. *Nutr Rev*. 2008 Oct;66(10 Suppl. 2):S182–94. doi:10.1111/j.1753-4887.2008.00104.x.
6. Macdonald HM, Mavroeidi A, Barr RJ, Black AJ, Fraser WD, Reid DM. Vitamin D status in postmenopausal women living at higher latitudes in the UK in relation to bone health, overweight, sunlight exposure and dietary vitamin D. *Bone*. 2008;42(5):996–1003. doi:10.1016/j.bone.2008.01.011
7. Sayre RM, Dowdy JC. Darkness at noon: sunscreens and vitamin D3. *Photochem Photobiol*. 2007;83(2):459–63. doi:10.1562/2006-06-29-RC-956
8. Mokdad AH. Burden of cardiovascular diseases in the Eastern Mediterranean Region, 1990–2015: findings from the Global Burden of Disease 2015 study. *Int J Public Health*. 2017 Aug 3. doi:10.1007/s00038-017-1012-3
9. Sadeghi M, Haghdoust AA, Bahrampour A, Dehghani M. Modeling the burden of cardiovascular diseases in Iran from 2005 to 2025: the impact of demographic changes. *Iran J Public Health*. 2017 Apr;46(4):506–16. PMID:28540267
10. Frieden TR, Jaffe MG. Saving 100 million lives by improving global treatment of hypertension and reducing cardiovascular disease risk factors. *J Clin Hypertens (Greenwich)*. 2018 Feb;20(2):208–11. doi:10.1111/jch.13195
11. Anderson JL, May HT, Horne BD, Bair TL, Hall NL, Carlquist JF, et al. Relation of vitamin D deficiency to cardiovascular risk factors, disease status, and incident events in a general healthcare population. *Am J Cardiol*. 2010;106(7):963–8. doi:10.1016/j.amjcard.2010.05.027

12. Wang H, Xia N, Yang Y, Peng D-Q. Influence of vitamin D supplementation on plasma lipid profiles: a meta-analysis of randomized controlled trials. *Lipids Health Dis.* 2012;11(1):1. doi:10.1186/1476-511X-11-42
13. Neyestani TR, Hajifaraji M, Omidvar N, Eshraghian MR, Shariatzadeh N, Kalayi A, et al. High prevalence of vitamin D deficiency in school-age children in Tehran, 2008: a red alert. *Public Health Nutr.* 2012 Feb;15(2):324–30. doi:10.1017/S1368980011000188
14. Chen TC, Chimeh F, Lu Z, Mathieu J, Person KS, Zhang A, et al. Factors that influence the cutaneous synthesis and dietary sources of vitamin D. *Arch Biochem Biophys.* 2007 Apr 15;460(2):213–7. doi:10.1016/j.abb.2006.12.017
15. Lee M, Ebert JR, Kadakia MP, Zhang J, Czerwinski SA. Inverse associations between cardiometabolic risk factors and 25-hydroxyvitamin D in obese American children and adolescents. *Am J Hum Biol.* 2016 Sep 10;28(5):736–42. doi:10.1002/ajhb.22863
16. Nikooyeh B, Samiee SM, Farzami MR, Alavimajd H, Zahedirad M, Kalayi A, et al. Harmonization of serum 25 hydroxycalciferol assay results from high performance liquid chromatography, enzyme immunoassay, radioimmunoassay, and immunochemiluminescence systems: a multicenter study. *J Clin Lab Anal.* 2017;31(6). doi:10.1002/jcla.22117
17. Nikooyeh B, Abdollahi Z, Hajifaraji M, Alavi-majd H, Salehi F, Yarpardar AH, et al. Vitamin D status and cardiometabolic risk factors across latitudinal gradient in Iranian adults: National food and nutrition surveillance. *Nutr Health.* 2017;23(2):87–94. doi:10.1177/0260106017702918
18. Kull M, Kallikorm R, Tamm A, Lember M. Seasonal variance of 25-(OH) vitamin D in the general population of Estonia, a Northern European country. *BMC Public Health.* 2009;9(1):1. doi:10.1186/1471-2458-9-22
19. Andersen S, Jakobsen A, Laurberg P. Vitamin D status in North Greenland is influenced by diet and season: indicators of dermal 25-hydroxy vitamin D production north of the Arctic Circle. *Br J Nutr.* 2013 Jul 14;110(1):50–7. doi:10.1017/S0007114512004709
20. Viljakainen HT, Palssa A, Kärkkäinen M, Jakobsen J, Cashman KD, Mølgaard C, et al. A seasonal variation of calcitropic hormones, bone turnover and bone mineral density in early and mid-puberty girls—a cross-sectional study. *Br J Nutr.* 2006;96(01):124–30. doi:10.1079/bjn20061719
21. Berry DJ, Hypponen E, Cortina-Borja M. Investigating the association of vitamin D seasonality on inflammatory and hemostatic markers. *Chronobiol Int.* 2013 Jul;30(6):786–95. doi:10.3109/07420528.2013.765888
22. Barchetta I, Baroni MG, Leonetti F, De Bernardinis M, Bertocchini L, Fontana M, et al. TSH levels are associated with vitamin D status and seasonality in an adult population of euthyroid adults. *Clin Exp Med.* 2015 Aug;15(3):389–96. doi:10.1007/s10238-014-0290-9
23. Abhimanyu, Coussens AK. The role of UV radiation and vitamin D in the seasonality and outcomes of infectious disease. *Photochem Photobiol Sci.* 2017 Mar 16;16(3):314–38. doi:10.1039/c6pp00355a
24. Hagenau T, Vest R, Gissel TN, Poulsen CS, Erlandsen M, Mosekilde L, et al. Global vitamin D levels in relation to age, gender, skin pigmentation and latitude: an ecologic meta-regression analysis. *Osteoporos Int.* 2009 Jan;20(1):133–40. doi:10.1007/s00198-008-0626-y
25. Al-Khalidi B, Kimball SM, Kuk JL, Ardern CI. Metabolically healthy obesity, vitamin D, and all-cause and cardiometabolic mortality risk in NHANES III. *Clin Nutr.* 2019 Apr;38(2):820–8. doi:10.1016/j.clnu.2018.02.025
26. Cheng S, Massaro JM, Fox CS, Larson MG, Keyes MJ, McCabe EL, et al. Adiposity, cardiometabolic risk, and vitamin D status: the Framingham Heart Study. *Diabetes.* 2010;59(1):242–8. doi:10.2337/db09-1011
27. Reis JP, von Mühlen D, Miller ER, Michos ED, Appel LJ. Vitamin D status and cardiometabolic risk factors in the United States adolescent population. *Pediatrics.* 2009;124(3):e371–e9. doi:10.1542/peds.2009-0213
28. Yetley EA. Assessing the vitamin D status of the US population. *Am J Clin Nutr.* 2008 Aug;88(2):558S–64S. doi:10.1093/ajcn/88.2.558S
29. Cheng S, Massaro JM, Fox CS, Larson MG, Keyes MJ, McCabe EL, et al. Adiposity, cardiometabolic risk, and vitamin D status: the Framingham Heart Study. *Diabetes.* 2010 Jan;59(1):242–8. doi:10.2337/db09-1011
30. Parker J, Hashmi O, Dutton D, Mavrodaris A, Stranges S, Kandala NB, et al. Levels of vitamin D and cardiometabolic disorders: systematic review and meta-analysis. *Maturitas.* 2010 Mar;65(3):225–36. doi:10.1016/j.maturitas.2009.12.013
31. Pittas AG, Chung M, Trikalinos T, Mitri J, Brendel M, Patel K, et al. Systematic review: Vitamin D and cardiometabolic outcomes. *Ann Intern Med.* 2010 Mar 2;152(5):307–14. doi:10.7326/0003-4819-152-5-201003020-00009
32. Tepper S, Shahar DR, Geva D, Avizohar O, Nodelman M, Segal E, et al. Identifying the threshold for vitamin D insufficiency in relation to cardiometabolic markers. *Nutr Metab Cardiovasc Dis.* 2014 May;24(5):489–94. doi:10.1016/j.numecd.2013.10.025
33. Moura FA, Saraiva F, de Faria EC, Coelho OR, Sposito AC. Seasonal variation of lipid profile and prevalence of dyslipidemia: a large population study. *J Am Coll Cardiol.* 2013;61(10 Suppl.):1330–3. doi:10.1016/S0735-1097(13)61330-3
34. Liang WW. Seasonal changes in preprandial glucose, A1C, and blood pressure in diabetic patients. *Diabetes Care.* 2007 Oct;30(10):2501-2. doi:10.2337/dc07-0597
35. Mozos I, Marginean O. Links between vitamin D deficiency and cardiovascular diseases. *BioMed Res Int.* 2015;2015. doi:10.1155/2015/109275
36. Nikooyeh B, Neyestani T. Cholesterol and vitamin D: how the ‘mother’ and ‘daughter’ molecules interact. In: Watson RR, De Meester F, eds *Handbook of cholesterol, biology, function and role in health and diseases*. Wageningen, Netherlands: Wageningen Academic Publishers; 2016:256–65.

37. Heravifard S, Neyestani TR, Nikooyeh B, Alavi-Majd H, Houshiarrad A, Kalayi A, et al. Regular consumption of both vitamin D- and calcium- and vitamin D- fortified yogurt drink is equally accompanied by lowered blood lipoprotein (a) and elevated apoprotein A1 in subjects with type 2 diabetes: a randomized clinical trial. *J Am Coll Nutr.* 2013;32(1):26–30. doi:10.1080/07315724.2013.767659
38. Wang H, Xia N, Yang Y, Peng D-Q. Influence of vitamin D supplementation on plasma lipid profiles: a meta-analysis of randomized controlled trials. *Lipids Health Dis.* 2012;11(1):42. doi:10.1186/1476-511X-11-42
39. Challoumas D. Vitamin D supplementation and lipid profile: what does the best available evidence show? *Atherosclerosis.* 2014;235(1):130–9. doi:10.1016/j.atherosclerosis.2014.04.024
40. Duque G, Macoritto M, Kremer R. 1, 25 (OH) 2D₃ inhibits bone marrow adipogenesis in senescence accelerated mice (SAM-P/6) by decreasing the expression of peroxisome proliferator-activated receptor gamma 2 (PPAR 2). *Exp Gerontol.* 2004;39(3):333–8. doi:10.1016/j.exger.2003.11.008
41. Wong KE, Szeto FL, Zhang W, Ye H, Kong J, Zhang Z, et al. Involvement of the vitamin D receptor in energy metabolism: regulation of uncoupling proteins. *Am J Physiol Endocrinol Metab.* 2009;296(4):E820–E8. doi:10.1152/ajpendo.90763.2008
42. Dix CF, Barclay JL, Wright OR. The role of vitamin D in adipogenesis. *Nutr Rev.* 2017;76(1):47–59. doi:10.1093/nutrit/nux056
43. Nikooyeh B, Neyestani TR, Zahedirad M, Mohammadi M, Hosseini SH, Abdollahi Z, et al. Vitamin D-fortified bread is as effective as supplement in improving vitamin D status: a randomized clinical trial. *J Clin Endocrinol Metab.* 2016 Jun;101(6):2511–9. doi:10.1210/jc.2016-163
44. Neyestani TR, Hajifaraji M, Omidvar N, Nikooyeh B, Eshraghian MR, Shariatzadeh N, et al. Calcium-vitamin D-fortified milk is as effective on circulating bone biomarkers as fortified juice and supplement but has less acceptance: a randomised controlled school-based trial. *J Hum Nutr Diet.* 2014 Dec;27(6):606–16. doi:10.1111/jhn.12191

Salt intake and its sources in children, adolescents and adults in the Islamic Republic of Iran

Noushin Mohammadifard,¹ Atena Mahdavi,² Alireza Khosravi,³ Ahmad Esmailzadeh,⁴ Awat Feizi⁵ and Nizal Sarrafzadegan^{6,7}

¹Pediatric Cardiovascular Research Center, Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Islamic Republic of Iran. ²Interventional Cardiology Research Center, Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Islamic Republic of Iran. ³Hypertension Research Center, Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Islamic Republic of Iran. ⁴Department of Community Nutrition, School of Nutritional Sciences and Dietetics, Tehran University of Medical Sciences, Tehran, Islamic Republic of Iran. ⁵Epidemiology and Biostatistics Department, School of Health, Cardiac Rehabilitation Research Center, Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Islamic Republic of Iran. ⁶Isfahan Cardiovascular Research Center, Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Islamic Republic of Iran (Correspondence to: N. Sarrafzadegan: nsarrafzadegan@gmail.com). ⁷School of Population and Public Health, Faculty of Medicine, University of British Columbia, Vancouver, Canada.

Abstract

Background: There is little evidence about salt intake and its food sources in the Iranian population, especially in children and adolescents.

Aims: To investigate salt intake and dietary sources in Isfahan, Islamic Republic of Iran.

Methods: This was a cross-sectional survey conducted in 2014–2015. We randomly selected 1384 adults (50.3% female, 49.7% male) aged > 18 years [mean 37.9 (10.6) years], and 786 children and adolescents (50.9% male, 49.1% female) aged 6–18 years [mean 12.5 (3.4) years]. All participants underwent a dietary assessment for salt intake, using a validated food frequency questionnaire.

Results: The total salt intake was 10.9 (3.4) g/day in adults and 10.3 (2.9) g/day in children and adolescents. Added salt was the primary source of salt intake, followed by bread and cheese in both groups. Salt intake was related significantly to being younger, male, a smoker, less educated and physically active in the adult group. In children and adolescents, it was significantly associated with increasing age, male sex, low physical activity and parents' education level (all $P < 0.05$).

Conclusions: Salt intake in Isfahan was more than twice that recommended by the World Health Organization. The main source of sodium was added salt, followed bread and cheese. Future national studies are warranted to assess the dietary salt intake and its main sources in different provinces in the Islamic Republic of Iran.

Keywords: nutrition surveys, sodium chloride, dietary source, dietary sodium, Islamic Republic of Iran

Citation: Mohammadifard N; Mahdavi A; Khosravi A; Esmaillzadeh A; Feizi A; Saarfzadegan N, et al. Salt intake and its sources in children, adolescents and adults in Isfahan, Islamic Republic of Iran. *East Mediterr Health J.* 2021;27(3):279–286 <https://doi.org/10.26719/2021.27.3.279>

Received: 27/07/19; accepted: 01/04/20

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Introduction

High salt intake can contribute to hypertension, cardiovascular disease (CVD), stroke, gastric cancer, osteoporosis and renal disease (1). About 1.65 million annual deaths in the Islamic Republic of Iran are attributed to cardiovascular events, among which, 7034 deaths were due to salt intake > 5 g/day in 2010 (2).

Salt intake reduction is the most efficient approach for reducing the global burden of hypertension and CVD (3). Thus, the World Health Organization (WHO) recommends that Member States reduce salt intake in their populations by 30% by 2025 (4). It is imperative to assess salt intake and its major sources in various nations (5). Mean daily salt intake based on 24-hour urinary sodium excretion was 10.2 g/day in the Iranian population, and it was higher in men than women in 2013 (6). The method of 24-hour urine collection is the gold standard for evaluation of salt consumption. However, this method tends to underestimate salt intake (7), and it cannot determine the food sources.

The major source of dietary sodium is processed food in adults who live in western countries (8), while snacks have the same role in adolescents (9). Traditional Japanese foods, including soy sauce and dried fish products provide high amounts of salt in the Japanese population (10). In China, added salt, soy sauce, monosodium glutamate and processed foods are the major sources of sodium intake (11). To the best of our knowledge, there is no evidence about salt intake and its sources in any Iranian community according to age group, especially children and adolescents. Therefore, in the current study, we aimed to assess the sodium and salt intake and contribution of food to salt intake by a validated food frequency questionnaire (FFQ) in the city of Isfahan, Islamic Republic of Iran.

Methods

Study design and participants

This cross-sectional study was conducted among 2170 healthy participants, including 1384 adults aged > 18

years, and 786 children and adolescents aged 6–18 years. The study was performed in 2014–2015 in Isfahan, the second biggest city in the Islamic Republic of Iran. Isfahan has 47 urban health centres. We selected an initial 18 clusters using a multistage cluster sampling method. Households were chosen by systematic random sampling based on the distribution of age and sex groups in the community, the proportion of population covered by the health centres, and the records in the centres. Then, 1 available adult from each household was recruited to complete our sample size in each age category. The inclusion criteria for adults were: age > 18 years; no history of chronic disease like CVD, diabetes mellitus, hypertension, thyroid disease, renal failure and liver disease; not being on a specific diet during the last year; nonpregnant or non-breast-feeding women; and not taking contraceptive drugs and dietary supplements. Individuals with incomplete data collection were excluded, as described previously (12). We recruited 1 or 2 children and adolescents (1 boy and/or 1 girl) aged 6–18 years in each selected household, if possible. The response rate was 94%. We called the participants and asked about missing questions. If they did not respond again, we excluded them from the study. The study was approved by the Isfahan Cardiovascular Research Institute (ICRI). Written informed consent was obtained from all participants.

Data collection

Trained health professionals carried out detailed interviews to obtain the required information, including socioeconomic and demographic characteristics. We assessed physical activity, using the International Physical Activity Questionnaire (13), and data collected were reported as metabolic equivalents of task (METs) minutes per week. METs thresholds as an indicator of physical activity intensity were measured continuously by calculating for walking, moderate-intensity activities, and vigorous-intensity activities. The intensity thresholds identified were 3.3 METs for walking, 4.9 for moderate physical activity and 6.8 for vigorous physical activity. A combined total physical activity was calculated as the sum of walking and moderate and vigorous METs.

Anthropometric measurements

Upon arrival in the ICRI, trained health professionals measured the participants' standing height to the nearest 0.5 cm. Body weight was measured to the nearest 0.5 kg, using a digital scale with the participants wearing light clothes and no shoes. Waist circumference and hip circumference were measured to the nearest 0.5 cm with nonstretchable measuring tape. Body mass index (BMI) was calculated by dividing weight (kg) by height per metre squared (m^2) (14).

Dietary assessment

Dietary behaviour was assessed by a validated 136-item semiquantitative FFQ (15). This FFQ was developed to determine sodium intake and the contribution of food to intake. All participants were requested to respond about their usual frequency of food item's consumption

(average over the past year). Response categories ranged from never or rarely (< 1/month), 1–3/month, 1/week, 2–4/week, 5 or 6/week, 1/day, 2 or 3/day, 4 or 5/day and \geq 6/day. We calculated sodium intake, using the Iranian Food Consumption Program, and based on the Iranian Food Composition Table (16,17). Food groups included dairy products (except for cheese), cheese, meats, processed meat and other meats (eggs, poultry, fish and red meat), vegetables, salty vegetables, fruits, grains (including breads and other grains), legumes, fast foods, canned foods, nuts and seeds, sweets, industrial beverages, fast foods, fat and oils. We estimated discretionary salt consumption through 4 questions, including the weight of the salt package that they usually use, how often and for how long the salt package is consumed, number of family members, and age of family members, as described previously (12). The percentage of sodium intake from each food group was calculated by dividing the amount of sodium intake from each group by total sodium intake and then multiplying by 100.

Statistical analysis

The mean (standard deviation) and n (%) were used to describe continuous and categorical variables, respectively. We used the weight of sodium (23 g/mol) equivalent to 2.5-fold of sodium chloride (58.5 g/mol) to convert sodium intake to salt intake. The χ^2 and Student's t tests were used to compare the baseline characteristics. The percentage of food contribution in sodium intake was not normally distributed, thus the Mann–Whitney U test was utilized. We utilized linear regression to examine the association of salt intake with age (years), sex (female/male), education (years of education), current smoking (yes/no), physical activity (METs min/week), BMI (kg/m^2) and waist circumference (cm). Statistical analyses were performed using SPSS for Windows 18.0 (SPSS, Chicago, IL, USA). The significance level was set at $P < 0.05$.

Results

This study included 2170 participants (1384 adults and 786 children and adolescents; Table 1). In the adults, the mean age was 37.9 (10.6) years and 49.7% were men, while among children and adolescents, the mean age was 12.5 (3.4) years and 50.9% were boys.

The salt intake was 10.9 (3.4) g/day in adults and 10.3 (2.9) g/day in children and adolescents (Table 2). Salt intake was significantly higher in men and boys ($P < 0.001$).

Salt sources like added salt, cheese and salty vegetables were significantly higher in females than males (all $P < 0.01$) (Table 3). However, bread, fast food, sweets, processed meat and canned food made a significantly higher contribution to salt intake in men than women (all $P < 0.001$). Added salt, cheese, and salty vegetables provided a significantly higher salt intake in girls than boys (all $P < 0.01$), and bread, fast food, processed meat and junk food contributed more to the salt intake in boys than girls (all $P < 0.05$).

Table 1 Basic characteristics of participants based on sex and age

Characteristics	Female n = 696	Male n = 688	Total n = 1384	Girls n = 386	Boys n = 400	Total n = 786
Mean (SD)						
Age (yr)	37.6 (9.8)	38.2 (11.4)	37.9 (10.6)	12.4 (3.4)	12.5 (3.3)	12.5 (3.4)
Education (yr)	10.5 (3.9)	11.3 (3.6)	10.9 (3.8)	—	—	—
Paternal education (yr)	—	—	—	11.4 (4.3)	11.7 (4.2)	11.6 (3.9)
Maternal education (yr)	—	—	—	10.8 (4)	10.6 (4.1)	10.7 (3.7)
Physical activity (METs min/wk)	448.3 (226.9)	512.6 (244.1)	481.1 (234.4)	524.8 (203.6)	596.2 (247.5)	569.4 (222.6)
BMI (kg/m ²)	27.3 (5)	26.1 (4.1)	26.7 (5.2)	20.6 (4.8)	21.0 (5.3)	20.8 (5.1)
WC (cm)	89.3 (12.1)	93 (11.2)	91.1 (11.7)	71.6 (12.1)	74.8 (14.6)	73.3 (13.5)
Frequency n (%)						
Marital status, n (%)						
Single	82 (11.8)	156 (22.7)	238 (17.2)	383 (99.2)	393 (98.2)	776 (98.7)
Married	591 (84.9)	518 (75.3)	1109 (80.1)	3 (0.8)	7 (1.8)	10 (1.3)
Spouse (dead/divorced)	23 (3.3)	14 (2)	37 (2.6)	-	-	-
Smokers, n (%)	4 (0.6)	117 (17)	121 (8.7)	1 (0.3)	7 (1.7)	8 (1)

BMI = body mass index; METs = metabolic equivalent task units; SD = standard deviation; WC = waist circumference.

The added salt, bread, cheese and salty vegetables significantly contributed to the salt intake in adults versus children and adolescents (all $P < 0.05$), and fast foods, sweets, processed meat, junk food, nuts and seeds provided higher salt intake in children and adolescents than in adults (all $P < 0.05$) (Table 4).

There was a significant negative correlation between salt intake and age, education, and total physical activity, and a significant positive correlation with male sex and smoking in the adult group (Table 5). In the children and adolescent group, age and male sex had a significant positive correlation, and parents' education level, and total physical activity had a significant negative correlation with salt intake (all $P < 0.05$).

Discussion

In the current study, we assessed sodium and salt intakes using the validated FFQ in Isfahan, Islamic Republic of Iran. Sodium and salt intake were about twice as high in adults and the children and adolescent groups than the WHO recommended level. Total salt intake was about 1 g higher in men and boys than in women and girls. Added salt, bread and cheese were the three highest sources of sodium intake and provided about 70% of sodium in both groups.

Similar to our study, Mirzaei et al. reported higher salt intake in men than women in the Islamic Republic of Iran (18). Salt intake was higher than the WHO-recommended level and in western countries such as Germany and Belgium, and South Africa (19–21). Using three 24-hour dietary recalls, the National Health and Nutrition Study indicated that mean sodium intake in American adults based on age, sex and race ranged from 2.9 to 3.9 g/day, and was higher than the recommended level. Meat and cereal products were the two main sources of salt intake in all groups in the United States of America (USA) (5). The level of sodium intake in East Asian countries was generally more than twice the WHO-recommended level, and more than in western countries. This might have been due to high salt content of bread, meat products, soups, cheese and processed foods (22). In agreement with our findings, the salt intake was higher than the WHO-recommended level, and the main source of salt intake was added salt in the Asian countries (23, 24). In some European countries such as Austria, the main sources of salt intake were cereals, meat and dairy products (25). Similarly, bread made a major contribution to the salt intake in different countries including USA, many European countries and Australia (26–28).

Salt intake of adolescents in some countries such as the USA, Europe and Oceania was far above the recommended level and similar to our study. The main

Table 2 Mean of daily sodium and salt intake based on sex in adults, children and adolescents

	Total	Women	Men	P*	Total	Girls	Boys	P*
Salt intake	Mean (SD)	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	Mean (SD)	
Added salt (g/d)	5.1 (2.7)	5.1 (2.8)	5.2 (2.7)	0.57	4.5 (2.2)	4.4 (2.2)	4.5 (2.3)	0.456
Total salt (g/d)	10.9 (3.4)	10.4 (3.3)	11.5 (2.7)	< 0.001	10.3 (2.9)	9.9 (3.1)	10.6 (2.8)	< 0.001
Total sodium (g/d)	4.3 (1.4)	4.1 (1.3)	4.5 (1.4)	< 0.001	4.2 (1.2)	3.9 (1.3)	4.5 (1.1)	< 0.001

*Mann-Whitney U test. SD = standard deviation.

Table 3 Food contribution to sodium/salt intake based on sex in adults, children and adolescents

Food groups (%)	Women	Men	P*	Girls	Boys	P*
	Mean (SD)	mean (SD)		mean (SD)	mean (SD)	
Added salt	48.7 (14.2)	45.3 (14.2)	< 0.001	44.7 (13.2)	42.5 (12.2)	< 0.001
Bread	16.4 (8)	17.8 (7.4)	< 0.001	16 (8.1)	17.1 (7.8)	< 0.001
Cheese	8.9 (6.2)	8.1 (5.6)	0.004	8.4 (4.9)	7.9 (5.0)	0.028
Dairy	5.7 (4.3)	6 (5.6)	0.063	5.5 (4.9)	5.6 (4.0)	0.336
Salty vegetables	6.3 (5.3)	4.2 (3.4)	< 0.001	5.1 (5)	3.7 (4.8)	< 0.001
Meat	1.1 (0.9)	1.3 (1.2)	0.185	1.4 (1.1)	1.6 (1.2)	0.324
Fast food	1.8 (2.7)	3.1 (3.7)	< 0.001	2.5 (3.4)	3.4 (4.5)	< 0.001
Sweets	1.4 (2.1)	2.5 (2.7)	< 0.001	2.8 (2.5)	3.1 (2.6)	0.172
Processed meats	3.6 (2.7)	4.4 (3.2)	< 0.001	5.9 (4)	6.7 (4.5)	0.002
Other vegetables	1.3 (1.2)	1.1 (0.97)	0.126	1.3 (1.1)	0.9 (1)	0.154
Junk food	1.9 (2.1)	2.1 (2.3)	0.142	2.2 (1.9)	3.3 (2.1)	< 0.001
Sauces	0.6 (0.7)	0.8 (0.9)	0.173	0.8 (0.9)	0.9 (1.1)	0.332
Canned food	0.8 (0.9)	1.5 (1.2)	< 0.001	1.0 (1.2)	1.3 (1.5)	0.194
Nuts and seeds	0.6 (0.8)	0.5 (0.7)	0.253	0.8 (1.1)	1.1 (1.3)	0.212
Other cereals	0.3 (0.2)	0.2 (0.1)	0.247	0.2 (0.2)	0.2 (0.1)	0.823
Fruits	0.5 (0.6)	0.4 (0.4)	0.259	0.3 (0.3)	0.3 (0.3)	0.839
Legumes	0.05 (0.05)	0.1 (0.09)	0.471	0.05 (0.03)	0.04 (0.03)	0.473
Fat and oils	0.3 (0.5)	0.5 (0.4)	0.145	0.8 (0.9)	0.6 (0.8)	0.209

*Mann-Whitney U test. SD = standard deviation.

source of salt intake was processed food, including industrial breads, which accounted for 15% of intake (29). Moreover, about 80% of adolescents in low- and middle-income countries frequently consumed salty snacks (30). However, inconsistent with our study, the Mis study of Slovenian adolescents showed that salt intake was higher in girls than boys (31). The salt intake was similar to the global level of salt intake. Hence, reducing salt intake is a health priority, particularly among younger age groups in our society and worldwide.

Since the main source of energy intake is derived from traditional bread consumption in the Iranian population, bread provided the highest salt intake after added salt. Moreover, unlike many parts of the world, bread and cheese are the most common form of breakfast in the Iranian population. Therefore, unlike western countries, processed food was not a major source of salt in our society. About 2% of salt is added to the flour as agreed and for consolidation of gluten compounds, which can be substituted with potassium and magnesium for fermentation of dough. However, Charlton et al. believe that 33% reduction in salt in bread should not change its taste (32). Decreasing salt content in bread could play a major role in salt reduction in our population. However, it needs some intersectoral collaboration and advocacy with legislators, policy-makers and other stakeholders (3).

Since Iranian women and girls are more likely to eat homemade food than men are, the contribution of added salt, cheese and salty vegetables was higher in women and girls. However, fast food, processed meat and canned food provided more salt intake in men and boys, and junk food in boys, compared to women and girls. For the same

reason as for added salt, bread, cheese and salty vegetables made a greater contribution to salt intake in adults, and fast foods, sweets processed meat, junk food, nuts and seeds contributed more for children and adolescents.

Table 4 Food contribution in salt intake based on age group: Isfahan Salt Study

Food item	Adults	Children and adolescents	P*
	Mean (SD)	Mean (SD)	
Added salt	47.1 (14.2)	43.6 (12.7)	< 0.001
Bread	17.2 (7.7)	16.7 (8.0)	0.013
Cheese	8.6 (5.9)	8.1 (4.9)	0.012
Dairy	5.8 (3.8)	5.6 (4.3)	0.052
Salty vegetables	5.3 (4.6)	4.3 (4.6)	< 0.001
Meat	1.2 (1)	1.5 (1.2)	0.064
Fast foods	2.4 (1.8)	3.0 (2.6)	0.008
Sweets	1.9 (1.7)	3.0 (2.2)	< 0.001
Processed meat	4.1 (3.0)	6.4 (4.1)	< 0.001
Other vegetable	1.2 (1.1)	1.0 (1.2)	0.057
Junk food	2.0 (2.1)	2.8 (2.5)	< 0.001
Sauces	0.7 (0.8)	0.9 (0.8)	0.075
Canned foods	1.1 (1)	1.2 (1.3)	0.158
Nuts and seeds	0.6 (0.8)	1.0 (1.2)	0.021
Other cereals	0.3 (0.3)	0.2 (0.1)	0.163
Fruits	0.5 (0.5)	0.3 (0.2)	0.129
Legumes	0.1 (0.1)	0.04 (0.1)	0.526
Fat and oils	0.4 (0.6)	0.7 (0.9)	0.061

*Mann-Whitney U test. SD = standard deviation.

Table 5 Association of salt intake with demographic, education, smoking status, physical activity and anthropometric indicators

Indicators	Adults		Children and adolescents	
	B regression (SE)	P	B regression (SE)	P
Age (yr)	-0.17 (0.03)	<0.001	0.11 (0.04)	0.005
Male sex	0.38 (0.08)	<0.001	0.34 (0.07)	<0.001
Education (yr)	-0.34 (0.09)	0.003	—	—
Paternal education (yr)	—	—	-0.30 (0.12)	0.021
Maternal education (yr)	—	—	-0.28 (0.11)	0.029
Smoking status	0.14 (0.06)	0.031	-0.08 (0.07)	0.231
Total physical activity (METs min/wk)	-0.36 (0.11)	0.015	-0.31 (0.12)	0.025
BMI (kg/m ²)	0.03 (0.01)	0.490	0.03 (0.17)	0.875
WC (cm)	0.04 (0.03)	0.205	0.07 (0.06)	0.291

Education entered as continues variables. BMI = body mass index; METs = metabolic equivalent of task units; SE = standard error; WC = waist circumference.

Thus, it can be concluded that health education, especially in women, regarding not using a salt shaker at the table and during cooking food, might be the most important strategy for salt reduction in our society. Other measures could be: to establish compliance with salt standards for all bakers; reformulation and legal limits of salt content in food products, particularly cheese, processed meat and junk food, ; to generate a healthy environment and support settings to promote a low-salt diet; restrictions on marketing of unhealthy food such as fast food, salty snacks and biscuits to children; mandatory nutritional labelling of salt; educating people to pay attention to labels; and raising consumer awareness.

Considering the inverse association of salt intake with age, educational level and physical activity, we can conclude that elderly people take care of their health more wisely, and by increasing their education level, this will result in people paying more attention to the well-being of themselves and their families. People who are physically active may adhere to all aspects of a healthy lifestyle. In agreement with our findings, several studies have indicated higher salt intake in young people and people of low socioeconomic status (33-34). Consistent with our findings, previous studies have reported a positive association between smoking and excessive salt intake (35). It is concluded that unhealthy lifestyle factors, such as smoking might induce a preference for salt intake (36).

Among the strengths of our study, we used a validated FFQ for assessment of salt intake, and randomly selected the population from a wide range of age groups including adults, children and adolescents. Hence, it was a unique study that examined the salt intake in an Iranian city. However, there were some limitations to the current study. First, our participants were selected from only 1

large city in the Central Islamic Republic of Iran. Thus, the findings cannot be generalized to the whole country. Second, FFQ is a less valid method because of the difficulty of recalling food, and investigating many food items may result in poor accuracy in estimating daily intake, which could have overestimated sodium intake. Nevertheless, this method was used by all other studies that investigated salt content of food.

Conclusion

Sodium and salt intake were more than twice the WHO-recommended level in adults, children and adolescents in Isfahan. The main sources of sodium were added salt, bread and cheese, which provided ~70% of sodium intake in the both age groups. Salt intake was significantly associated with higher age, male sex, smoking, and less education and physical activity in the adult group. In the children and adolescents, salt intake was significantly related to younger age, male sex, less physical activity and paternal education level. Future national studies are warranted to assess dietary salt intake and its main sources, and then it would be crucial to implement a salt reduction strategy in the Iranian population.

Acknowledgement

This study was conducted by Isfahan Cardiovascular Research Institute, (WHO collaborating centre) and was supported by the Department of Nutrition, the Iranian Ministry of Health and Medical Education.

Funding: None.

Competing interests: None declared.

References

1. Aaron KJ, Sanders PW. Role of dietary salt and potassium intake in cardiovascular health and disease: a review of the evidence. *Mayo Clin Proc.* 2013 Sep;88(9):987–95. <http://dx.doi.org/10.1016/j.mayocp.2013.06.005> PMID:24001491
2. Mozaffarian D, Fahimi S, Singh GM, Micha R, Khatibzadeh S, Engell RE, et al; Global Burden of Diseases Nutrition and Chronic Diseases Expert Group. Global sodium consumption and death from cardiovascular causes. *N Engl J Med.* 2014 Aug 14;371(7):624–34. <http://dx.doi.org/10.1056/NEJMoa1304127> PMID:25119608

Apport en sel et ses sources chez les enfants, les adolescents et les adultes à Ispahan (République islamique d'Iran)

Résumé

Contexte : Il existe peu de données sur l'apport en sel et ses sources alimentaires dans la population iranienne, en particulier chez les enfants et les adolescents.

Objectifs : Étudier l'apport en sel et les sources alimentaires à Ispahan (République islamique d'Iran).

Méthodes : Il s'agissait d'une enquête transversale réalisée au cours de la période comprise entre 2014 et 2015. Nous avons sélectionné de façon aléatoire 1384 adultes âgés de plus de 18 ans (50,3 % de femmes, 49,7 % d'hommes) [moyenne 37,9 ans (ET 10,6)] et 786 enfants et adolescents âgés de 6 à 18 ans (50,9 % de garçons, 49,1 % de filles) [moyenne 12,5 ans (ET 3,4)]. Tous les participants ont fait l'objet d'une évaluation diététique de leur apport en sel, à l'aide d'un questionnaire validé sur la fréquence de consommation des aliments.

Résultats : L'apport total en sel était de 10,9 g/jour chez les adultes (ET 3,4) et de 10,3 g/jour chez les enfants et les adolescents (ET 2,9). Le sel ajouté était la principale source d'apport en sel, suivi du pain et du fromage dans les deux groupes. Une relation significative a été établie entre l'apport en sel et un âge plus jeune, l'appartenance au sexe masculin, le fait de fumer, d'être moins instruit et d'être physiquement actif dans le groupe des adultes. Chez les enfants et les adolescents, il était significativement associé à un âge plus avancé, au sexe masculin, à une faible activité physique et au niveau d'éducation des parents (tous confondus, $p < 0,05$).

Conclusions : L'apport en sel à Ispahan était plus de deux fois supérieur à celui recommandé par l'Organisation mondiale de la Santé. La principale source de sodium était le sel ajouté, suivi du pain et du fromage. De futures études nationales sont nécessaires pour évaluer l'apport en sel alimentaire et ses principales sources dans différentes provinces de la République islamique d'Iran.

مدخول الملح ومصادره لدى الأطفال والمراهقين والبالغين في أصفهان بجمهورية إيران الإسلامية

نوشين محمدفارد، آتينا مهداوي، علي رضا خسروي، أحمد إسماعيل زاده، عوض فيزي، نضال صرافزاديجان

الخلاصة

الخلفية: لا توجد أدلة كثيرة حول كمية مدخول الملح ومصادره الغذائية بين الإيرانيين، لا سيما الأطفال والمراهقين.

الأهداف: هدفت هذه الدراسة إلى التحري عن كمية مدخول الملح ومصادره الغذائية في أصفهان بجمهورية إيران الإسلامية.

طرق البحث: أُجري مسح مقطعي في الفترة 2014 - 2015. اخترنا عشوائياً 1384 بالغاً (50.3٪ منهم إناث، 49.7٪ ذكور) أكبر من 18 سنة [المتوسط 37.9 (10.6) سنة، و786 طفلاً ومراهقاً (50.9٪ ذكور، 49.1٪ إناث) تبلغ أعمارهم 6 - 18 سنة [المتوسط 12.5 (3.4) سنة]. وخضع جميع المشاركين لتقييم غذائي لمدخول الملح، باستبيان تواتر الغذاء وهو استبيان مصادق عليه.

النتائج: بلغ إجمالي مدخول الملح 10.9 (3.4) جرام/يوم لدى البالغين، و10.3 (2.9) جرام/يوم لدى الأطفال والمراهقين. وكان الملح المضاف هو المصدر الرئيسي لمدخول الملح، يليه الخبز والجبن في المجموعتين. ووجد ارتباط يُعتمد به بين مدخول الملح وصغر العمر، والجنس الذكري، والمدخنين، والأقل تعليماً، والنشاط البدني في مجموعة البالغين. وفي الأطفال والمراهقين، ارتبط مدخول الملح بزيادة العمر، والجنس الذكري، وانخفاض النشاط البدني، ومستوى تعليم الوالدين (جميع القيم الاحتمالية أقل من 0.05).

الاستنتاجات: بلغ مدخول الملح في أصفهان أكثر من ضعف ما أوصت به منظمة الصحة العالمية. والمصدر الرئيسي للصوديوم هو الملح المضاف، يليه الخبز والجبن. هناك ما يبرر إجراء دراسات وطنية في المستقبل لتقييم كمية مدخول الملح في النظام الغذائي والمصادر الرئيسية له في محافظات مختلفة في جمهورية إيران الإسلامية.

- Mohammadifard N, Fahimi S, Khosravi A, Pouraram H, Sajedinejad S, Pharoah P, et al. Advocacy strategies and action plans for reducing salt intake in Iran. Arch Iran Med. 2012 May;15(5):320-4. PMID:22519384
- Graudal N, Jurgens G. Conflicting evidence on health effects associated with salt reduction calls for a redesign of the salt dietary guidelines. Prog Cardiovasc Dis. 2018 May-Jun;61(1):20-6. <http://dx.doi.org/10.1016/j.pcad.2018.04.008> PMID:29727609
- Fulgoni VL, 3rd, Agarwal S, Spence L, Spence L, Samuel P. Sodium intake in US ethnic subgroups and potential impact of a new sodium reduction technology: NHANES Dietary Modeling. Nutr J. 2014 Dec 18;13(1):120. <http://dx.doi.org/10.1186/1475-2891-13-120> PMID:25522786
- Mohammadifard N, Khosravi A, Salas-Salvadó J, Becerra-Tomás N, Nouri F, Abdollahi Z, et al. Trend of salt intake measured by 24-hour urine collection samples among Iranian adults population between 1998 and 2013: The Isfahan Salt Study. Nutr Metab Cardiovasc Dis. 2019 Dec;29(12):1323-9. <http://dx.doi.org/10.1016/j.numecd.2019.07.019> PMID:31672449

7. Xu J, Wang M, Chen Y, Zhen B, Li J, Luan W, et al. Estimation of salt intake by 24-hour urinary sodium excretion: a cross-sectional study in Yantai, China. *BMC Public Health*. 2014 Feb 8;14:136. <http://dx.doi.org/10.1186/1471-2458-14-136> PMID:24507470
8. Anderson CA, Appel LJ, Okuda N, Brown IJ, Chan Q, Zhao L, et al. Dietary sources of sodium in China, Japan, the United Kingdom, and the United States, women and men aged 40 to 59 years: the INTERMAP study. *J Am Diet Assoc*. 2010 May;110(5):736–45. <http://dx.doi.org/10.1016/j.jada.2010.02.007> PMID:20430135
9. Ponzo V, Ganzit GP, Soldati L, De Carli L, Fanzola I, Maiandi M, et al. Blood pressure and sodium intake from snacks in adolescents. *Eur J Clin Nutr*. 2015 Jun;69(6):681–6. <http://dx.doi.org/10.1056/NEJMoa1304127> PMID:25669316
10. Toda A, Ishizaka Y, Tani M, Yamakado M. Current dietary salt intake of Japanese individuals assessed during health check-up. *Hypertens Res*. 2015 Feb;38(2):163–8. <http://dx.doi.org/10.1038/hr.2014.154> PMID:25354779
11. Du S, Batis C, Wang H, Zhang B, Zhang J, Popkin BM. Understanding the patterns and trends of sodium intake, potassium intake, and sodium to potassium ratio and their effect on hypertension in China. *Am J Clin Nutr*. 2014 Feb;99(2):334–43. <http://dx.doi.org/10.3945/ajcn.113.059121> PMID:24257724
12. Mohammadifard N, Khaledifar A, Khosravi A, Nouri F, Pourmoghadas A, Feizi A, et al. Dietary sodium and potassium intake and their association with blood pressure in a non-hypertensive Iranian adult population: Isfahan salt study. *Nutr Diet*. 2017 Jul;74(3):275–82. <http://dx.doi.org/10.1111/1747-0080.12304> PMID:28731609
13. Craig CL, Marshall AL, Sjostrom M, Bauman AE, Booth ML, Ainsworth BE, et al. International physical activity questionnaire: 12-country reliability and validity. *Med Sci Sports Exerc*. 2003 Aug;35(8):1381–95 PMID:12900694
14. The practical guide identification, evaluation and treatment of overweight and obesity in adults. Bethesda, MD: National Institute of Health; 2000 (NIH Publication Number 00-4084, https://www.nhlbi.nih.gov/files/docs/guidelines/prctgd_c.pdf, accessed 30 November 2020).
15. Mohammadifard N, Khosravi AR, Esmailzadeh A, et al. Validation of simplified tools for assessment of sodium intake in Iranian population: rationale, design and initial findings. *Arch Iran Med*. 2016 Sep;19(9):652–8. PMID:27631181
16. Azar M, Sarkisian E. Food Composition Table of Iran. Tehran: National Nutrition and Food Research Institute; 1980.
17. Rafiei M, Boshtam M, Marandi A, Jalali A, Vakili R. The Iranian Food Consumption Program (IFCP), a unique nutritional software in Iran. *Iran J Public Health*. 2002;31(3–4):105–7.
18. Mirzaei M, Moayedallaie S, Jabbari L, Mohammadi M. Prevalence of hypertension in Iran 1980–2012: a systematic review. *J Tehran Heart Cent*. 2016 Oct;11(4):159–67. PMID:28496506
19. Johnner SA, Thamm M, Schmitz R, Rimer T. Current daily salt intake in Germany: biomarker-based analysis of the representative DEGS study. *Eur J Nutr*. 2015 Oct;54(7):1109–15. <http://dx.doi.org/10.1007/s00394-014-0787-8> PMID:25341396
20. Vandevijvere S, De Keyser W, Chapelle JP, Jeanne D, Mouillet G, Huybrechts I, et al. Estimate of total salt intake in two regions of Belgium through analysis of sodium in 24-h urine samples. *Eur J Clin Nutr*. 2010 Nov;64(11):1260–5. <http://dx.doi.org/10.1038/ejcn.2010.148> PMID:20717132
21. Maseko MJ, Majane HO, Milne J, Norton GR, Woodiwiss AJ. Salt intake in an urban, developing South African community. *Cardiovasc J S Afr*. 2006 Jul–Aug;17(4):186–91. PMID:17001421
22. Froment A, Milon H, Gravier C. [Relationship of sodium intake and arterial hypertension. Contribution of geographical epidemiology (author's transl)]. *Rev Epidemiol Sante Publique*. 1979;27(5-6):437–54 (in French). PMID:554290
23. Batcagan-Abueg AP, Lee JJ, Chan P, Rebello SA, Amarra MS. Salt intakes and salt reduction initiatives in Southeast Asia: a review. *Asia Pac J Clin Nutr*. 2013;22(4):490–504. doi: 10.6133/apjcn.2013.22.4.04. PMID: 24231008.
24. Shao S, Hua Y, Yang Y, Liu X, Fan J, Zhang A, Xiang J, Li M, Yan LL. Salt reduction in China: a state-of-the-art review. *Risk Manag Healthc Policy*. 2017 Feb 22;10:17–28. doi: 10.2147/RMHP.S75918. PMID: 28260957.
25. Hasenegger V, Rust P, Konig J, Purtscher AE, Erler J, Ekmekcioglu C. Main sources, socio-demographic and anthropometric correlates of salt intake in Austria. *Nutrients*. 2018 Mar 6;10(3):E311. <http://dx.doi.org/10.3390/nu10030311> PMID:29509671
26. Quilez J, Salas-Salvado J. Salt in bread in Europe: potential benefits of reduction. *Nutr Rev*. 2012 Nov;70(11):666–78. doi: 10.1111/j.1753-4887.2012.00540.x. PMID: 23110645.
27. Bhat S, Marklund M, Henry ME, Appel LJ, Croft KD, Neal B, Wu JHY. A Systematic Review of the Sources of Dietary Salt Around the World. *Adv Nutr*. 2020 May 1;11(3):677–686. doi: 10.1093/advances/nmz134. PMID: 31904809
28. Bolton KA, Webster J, Dunford EK, Jan S, Woodward M, Bolam B, Neal B, Trieu K, Reimers J, Armstrong S, Nowson C, Grimes C. Sources of dietary sodium and implications for a statewide salt reduction initiative in Victoria, Australia. *Br J Nutr*. 2020 May 28;123(10):1165–1175. doi: 10.1017/S000711452000032X. PMID: 31992370.
29. Rosi A, Paoletta G, Biasini B, Scazzina F; SINU Working Group on Nutritional Surveillance in Adolescents. Dietary habits of adolescents living in North America, Europe or Oceania: A review on fruit, vegetable and legume consumption, sodium intake, and adherence to the Mediterranean Diet. *Nutr Metab Cardiovasc Dis*. 2019 Jun;29(6):544–560. doi: 10.1016/j.numecd.2019.03.003. PMID: 31078365. Keats EC, Rappaport AI, Shah S, Oh C, Jain R, Bhutta ZA. The dietary intake and practices of adolescent girls in low- and middle-income countries: a systematic review. *Nutrients*. 2018;10(12):1978. <http://dx.doi.org/10.3390/nu10121978> PMID:30558128
30. Keats EC, Rappaport AI, Shah S, Oh C, Jain R, Bhutta ZA. The dietary intake and practices of adolescent girls in low- and middle-income countries: a systematic review. *Nutrients*. 2018;10(12):1978. <http://dx.doi.org/10.3390/nu10121978> PMID:30558128

31. Fidler Mis N, Kobe H, Stimec M. Dietary intake of macro- and micronutrients in Slovenian adolescents: comparison with reference values. *Ann Nutr Metab.* 2012;61(4):305–13. <http://dx.doi.org/10.1159/000342469> PMID:23208160
32. Charlton KE, MacGregor E, Vorster NH, Levitt NS, Steyn K. Partial replacement of NaCl can be achieved with potassium, magnesium and calcium salts in brown bread. *Int J Food Sci Nutr.* 2007 Nov;58(7):508–21. doi: 10.1080/09637480701331148. PMID: 17852502.
33. Nerbass FB, Pecoits-Filho R, McIntyre NJ, McIntyre CW, Willingham FC, Taal MW. Demographic associations of high estimated sodium intake and frequency of consumption of high-sodium foods in people with chronic kidney disease stage 3 in England. *J Ren Nutr.* 2014 Jul;24(4):236–42. doi: 10.1053/j.jrn.2014.03.003. PMID: 24788310.
34. de Mestral C, Mayén AL, Petrovic D, Marques-Vidal P, Bochud M, Stringhini S. Socioeconomic Determinants of Sodium Intake in Adult Populations of High-Income Countries: A Systematic Review and Meta-Analysis. *Am J Public Health.* 2017 Apr;107(4):e1–e12. doi: 10.2105/AJPH.2016.303629. PMID: 28207328.
35. Lampure A, Schlich P, Deglaire A, Castetbon K, Péneau S, Hercberg S, et al. Sociodemographic, psychological, and lifestyle characteristics are associated with a liking for salty and sweet tastes in French adults. *J Nutr.* 2015 Mar;145(3):587–94. <http://dx.doi.org/10.3945/jn.114.201269> PMID:25733476
36. Choi K-H, Park M-S, Kim JA, Lim JA. Associations between excessive sodium intake and smoking and alcohol intake among Korean men: KNHANES V. *Int J Environ Res Public Health.* 2015 Dec 8;12(12):15540–9. <http://dx.doi.org/10.3390/ijerph121215001> PMID:26670236

The effect of an educational intervention on awareness of various aspects of pulmonary tuberculosis in patients with the disease

Kalthoum Yousif,¹ Mabrouka El Maki,² Rosa Khalil Babikir^{1,3} and Hasan Abuaisha⁴

¹Faculty of Nursing Sciences, National Ribat University, Burrie, Sudan (Correspondence to: Kalthoum Yousif: kalthoumyousif@gmail.com). ²Kamleen Ahlia College, Al-Kamleen, Jazeera State, Sudan. ³Faculty of Applied Medical Sciences, Al-Baha University, Al-Baha City, Saudia Arabia ⁴Department of Medicine, Al-Mughtaribeen University, Gabra, Sudan.

Abstract

Background: Tuberculosis (TB) is a major health problem worldwide. Raising awareness of various aspects of the disease among patients who have TB is important to help in control and prevention.

Aims: This was a quasi-experimental study, pre- and post-test, designed to evaluate the effect of an educational intervention on awareness among patients with pulmonary TB.

Methods: A structured questionnaire covering various facts about pulmonary TB was used in the pre-intervention phase for 150 TB patients who were being followed-up in a major hospital in Sudan ($r = 0.80$). The same questionnaire was reused after the patients underwent an educational awareness programme.

Results: There were more males (74%) than females. Mean age was 36.5 years. Most patients (86.6%) had some education, however, their knowledge about aspects of TB was generally poor prior to the intervention. This included the nature of the causative organism, modes of transmission and measures needed for the control and prevention. Post-intervention, there was significant improvement in all aspects of knowledge tested ($P < 0.007$).

Conclusion: Although the diagnosis of TB in the participants was confirmed and they were on regular clinical follow-up, their knowledge about various aspects of TB was poor prior to the educational intervention. There is a need for more effort towards raising awareness among patients with TB about their disease while on treatment. This is important to help control and prevent the disease.

Key words: pulmonary tuberculosis, awareness, patient education

Citation: Yousif K; El Maki M; Babikir R; Abuaisha H. The effect of an educational intervention on awareness of various aspects of pulmonary tuberculosis in patients with the disease. East Mediterr Health J. 2021;27(3):287-292. <https://doi.org/10.26719/emhj.20.102>

Received: 17/04/19; accepted: 01/03/20

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Introduction

Tuberculosis (TB) is a chronic infectious disease caused by *Mycobacterium tuberculosis* (1). It is the world's leading cause of death due to infectious disease (2) and was declared a global public health emergency in 1993 by the World Health Organization (WHO) (3). It has been reported that 64% of an estimated 10 million TB cases are detected and treated each year (2). Identification of risk factors is crucial for policy-makers to put in place appropriate strategies to prevent the disease and reduce the global burden of TB (3). The disease can be avoided and cured completely, depending on the level of health awareness and knowledge of the community through prevention and control (4). All WHO Member States have adopted the "End TB Strategy", which covers the period 2016–2035 (5).

The social stigma of TB is high in all categories of the community, irrespective of education level (6). Control is a high priority and has become an international objective with the increasing number of cases throughout the world, including the developed countries (6). Sudan has high prevalence of TB: incidence was 114 cases per 100 000 population in 2012 (2), reported to have increased

to 117 per 100 000 population in 2016, probably due to poverty and low health expenditure (6.2% of GDP) (7). The country accounts for 15% of the TB burden in the WHO Region for the Eastern Mediterranean (8). It was recently observed that 26.6% of patients with TB in the Region had extra-pulmonary TB (9,10).

Sudan is an extremely turbulent country that has seen years of civil conflict, including the North–South and Darfur crises (11). Conflicts impact health infrastructure and human resources, which can hinder disease prevention and control measures. This escalates the burden of communicable diseases such as tuberculosis (11). In addition, conflicts lead to the displacement of populations and impair access to health care. This can increase TB transmission, worsen patient outcomes and lead to increasing rates of drug resistance (12). Notified TB cases have remained relatively constant in Sudan over the past decade, within the range 19 817 to 22 097 (7). However, the prevalence of multi-drug resistant TB, as reported by Sudan's national TB programme in 2012, was 19.0% in re-treatment cases and 1.8% in new cases (7).

A national TB programme has been developed and implemented since 1992 in accordance with the

recommendations of the International Union against TB and Lung Disease (13).

This study was designed to evaluate the awareness of patients who have pulmonary TB before and after an educational intervention. The emphases were on the importance of ways to prevent the spread of the disease and compliance to treatment schedules.

Methods

Study design

The study was a quasi-experimental pre- and post-test educational intervention carried out on patients with proven pulmonary TB who were attending the chest clinic in Omdurman Military Medical Corps Hospital for follow-up during the period April–July 2018. The chest clinic is held twice a week: one morning and one afternoon session.

Inclusion criteria in the study were: adult patients (age above 18 years); diagnosis of pulmonary TB documented in the medical records; patients on follow-up for at least 2 months; patients attended the follow-up regularly; and patients noted to be compliant to treatment by their treating team.

Exclusion criteria were: incomplete medical records; and not willing to participate in the study.

The research fellow (MEM) attended both clinics every week with prior permission of the consultant physicians in charge. On average there were about 6 patients with proven pulmonary TB per clinic. Over the study period, our researcher (MEM) approached 190 patients who fulfilled the inclusion criteria while waiting to be seen or soon after being seen by the treating team (convenience sampling method). She explained the research objectives to each patient and recorded the required information from 150 patients who accepted to participate in the study. Participants in the study were requested to attend educational sessions of at least 2 hours each, in groups according to their convenience. The educational sessions were arranged with the collaboration of the treating team, and each group answered the same questionnaire after completion of the session.

A structured questionnaire was designed by the authors, revised, amended and finally approved by an expert committee consisting of 2 consultants from the Department of Communicable Diseases, Federal Ministry of Health, and 2 consultants from the Department of Community Medicine, Faculty of Medicine, the National Ribat University. The questionnaire was used in face-to-face interviews with the participants in the study. It included 6 variables for sociodemographic data and 34 items covering basic knowledge about TB: causes, mode of transmission, symptoms, treatment, control and prevention. The score for the knowledge variables was recorded by interval scale with “Yes” or “No” answers for each variable question. A score of “1” was awarded for each correct answer. The total score was adjusted to be out of 100.

The content validity of the questionnaire was evaluated and approved by the panel of experts detailed above. Instrument validity and reliability were tested in a pilot study on 15 patients who answered the questionnaire before and after the educational intervention. The pilot study patients were excluded from the study sample. The Pearson correlation coefficient (r) was 0.80. A teaching programme comprising lectures, handouts, leaflets and handbooks containing the instructions for the control and prevention of the spread of the disease were distributed to the participants. The data collection time between the pre- and post-test was 4 months.

The paired samples t -test was used to measure the statistical difference between the 2 means; 95% confidence interval (CI) was used where appropriate. Statistical significance was taken at level $P \leq 0.05$.

Ethical considerations

Permission was obtained from the Research Committee on Human Subjects in the National Ribat University and from the manager and director of the TB Management Unit in the Military Hospital. All participants in the study were informed about the aim of the study and they signed a written informed consent form. It was explained that the data would be kept confidential. Participants had the right to withdraw from the study any time they wished.

Results

One hundred and fifty out of 190 patients approached agreed to take part in the study (response rate 79%). Mean age was 36.5 (range 16–63) years. There were 111 males (74%) and 39 females (26%).

The majority of the participants (86.6%) had basic education or higher: 49.3% having secondary school education and only 1.3% having higher education. Just over 13% were illiterate.

The participants were tested on their knowledge of various aspects of TB. The 4 fields covered in the questionnaire were: causative agent, mode of transmission, symptoms, and control and prevention. There was an improvement in the scores for all the variables after the educational intervention and the differences were all statistically significant. Although more than 86% of the patients were educated (about 50% secondary school or higher) yet their knowledge about the nature of tuberculosis as an infectious disease was very low and improved significantly after the educational intervention (Table 1).

Correct information about mode of transmission of TB was very deficient prior to the educational intervention (Table 2). The knowledge that TB is transmitted by contaminated air droplets showed a high statistically significant improvement ($P < 0.001$) after the educational intervention.

Knowledge about common symptoms in pulmonary TB was alarmingly low among patients prior to the educational programme. Coughing blood was not recognized as an important symptom by the majority

Table 1 Knowledge in regard to agents causing tuberculosis (TB) (correct answer scores) prior to and after the intervention (n = 150, degrees of freedom = 148)

Knowledge variable	Score				95% CI		t	P
	Pre-test		Post-test		Lower	Upper		
	Mean	SD	Mean	SD				
TB is an infectious disease	0.59	0.49	0.95	0.23	-0.44	-0.27	-8.0	< 0.003
TB is a bacterial infection	0.55	0.50	0.96	0.20	-0.50		-9.4	< 0.001
TB is a viral infection	0.53	0.50	0.93	0.25	-0.50	-0.32	-8.9	< 0.006
TB is a parasitic infection	0.53	0.50	0.93	0.25	-0.50	-0.32	-8.9	< 0.006

CI = confidence interval; SD = standard deviation.

of patients until they were educated about this (Table 3). Although our participants were coming regularly for medical follow-up, more than a third of them were not aware of the importance of strict compliance to the treatment regimen (Table 4).

Prior to our educational intervention, only 55% of the respondents knew that TB was a bacterial infection. This rose to 96% post-intervention. Similarly, knowledge that the major source of infection was via contaminated droplets in the air increased from 60% of participants to 93% after the intervention.

Discussion

In this study, the majority of patients (74%) were males. This is consistent with a WHO study from Eastern Sudan which reported that pulmonary TB was commoner among males in the general population (14). The mean age of our patients was 36.5 years, i.e. the young productive age, a finding that supports the view that this disease has a high impact on productivity and the economy (3,5).

Although about 50% of our sample had reasonably good education, their knowledge of various aspects of TB prior to the educational intervention was generally poor. Awareness is a very important parameter to be assessed in order to provide baseline data to assist decision-makers in the planning and delivery of an effective control programme (14).

It is rewarding that after our educational intervention the participants attained a high (statistically significant) knowledge score (around 90%) in all variables. A study done in Egypt in 2012 showed similar findings, i.e.

significant improvement following an educational intervention programme (15).

Prior to our educational intervention, only 55% of the respondents knew that TB was a bacterial infection; this almost doubled after the intervention. A 2006 WHO report stated that there was lack of awareness of even the occurrence of TB in Khartoum State in (16). Similarly, only 60% of our respondents knew that the major source of infection was contaminated droplets, improving to 93% after the intervention, over 50% improvement. It is now known that the major source of TB is droplet infection, and the droplet nuclei generated by sputum-positive patients with pulmonary TB particles must be fresh enough to carry a viable organism. Other research has established that various social determinants compound the issue: these include gender issues, unemployment, illiteracy, poor nutrition, indoor air pollution, political instability and lack of access to proper sanitation and health education (17,18).

Knowledge of symptoms related to pulmonary TB was disturbingly poor in our study sample. Only about one third of the respondents gave the correct answers prior to the intervention. This improved significantly post-intervention. Similar findings were reported by Lewis et al. in 2004 (19).

Again knowledge about measures needed for control and prevention improved significantly post intervention. Gaps in the knowledge, such as mode of transmission, treatment measures and prevention, can lead to diagnostic and treatment delays among many of those living with TB. Delays in treatment occur for several reasons, e.g. lack of knowledge, lack of awareness

Table 2 Knowledge in regard to mode of transmission of tuberculosis (TB) (correct answer scores) prior to and after the intervention (n = 150, degrees of freedom = 148)

Knowledge variable	Score				95% CI		t	P
	Pre-test		Post-test					
	Mean	SD	Mean	SD	Lower	Upper		
TB is transmitted through contaminated air droplet	0.60	0.49	0.93	0.25	−0.42	−0.24	−7.4	< 0.001
TB is transmitted through shaking hands	0.57	0.50	0.93	0.25	−0.45	−0.27	−7.9	< 0.007
TB is transmitted through sharing dishes	0.55	0.50	0.91	0.28	−0.45	−0.27	−7.7	< 0.004

CI = confidence interval; SD = standard deviation.

Table 3 Knowledge in regard to symptoms of tuberculosis (correct answer scores) prior to and after intervention (n = 150, degrees of freedom 148)

Knowledge variable	Score				95% CI		t	P
	Pre		Post		Lower	Upper		
	Mean	SD	Mean	SD				
Coughing for 3 weeks or more	0.65	0.48	0.99	0.12	−0.42	−0.26	−8.4	< 0.001
Coughing up blood	0.33	0.47	0.93	0.25	−0.69	−0.51	−13.7	< 0.001
Chest pain worse with breathing	0.35	0.48	0.84	0.37	−0.59	−0.40	−10.0	< 0.001
Weight loss	0.32	0.47	0.85	0.35	−0.63	−0.44	−11.1	< 0.003
Fatigue	0.33	0.47	0.82	0.39	−0.58	−0.39	−9.8	< 0.009
Night fever	0.37	0.49	0.89	0.32	−0.61	−0.42	−10.8	< 0.003
Night sweats	0.39	0.49	0.83	0.38	−0.53	−0.33	−8.6	< 0.006
Chills	0.43	0.50	0.85	0.35	−0.52	−0.33	−8.6	< 0.005

CI = confidence interval; SD = standard deviation.

of the significance of symptoms, negative social attitudes and combinations of these 3 factors (20–23). This can be explained by the fact that pulmonary tuberculosis is a disease associated with poverty and low socioeconomic level (23). Research has shown that a poor standard of living and overcrowding are related, and both contribute to the prevalence of the disease (1). Other factors that have resulted in increasing the trend of TB in Africa are HIV infection, malnutrition, crowded living conditions, lack of access to free or affordable health care services and dependence on traditional healers (24). The WHO is working to reduce the burden of TB and halve the number and prevalence of TB deaths by 2015 through its Stop TB strategy and supporting the Global Plan to Stop TB (25).

Tuberculosis is preventable using effective vaccination. However, the Bacillus Calmette–Guérin (BCG) vaccine has been the only successful TB vaccine so far (26). The BCG vaccine is usually given by intramuscular injection to babies and children from birth up to 16 years; it is also sometimes given to adults up to 35 years (27). The

adults are often given a tuberculin skin test (TST) before vaccination, but the vaccine does not work well in adults due to a number of factors, including the method used, route of administration, environment and characteristics of the population (27).

Conclusion

Although the diagnosis of TB in the participants in this study was proven and they were on regular clinical follow-up, their knowledge about various aspects of their disease was poor prior to the educational intervention. This reflects the need for more efforts towards raising awareness among patients with TB while on treatment. This is important to help in the control and prevention of the disease. Our educational intervention resulted in significant improvement in all the aspects of knowledge tested in our participants. This emphasizes the educational role of the health care providers in the management, control and prevention of TB.

Table 4 Knowledge in regard to control, prevention and compliance with treatment of tuberculosis (correct answer scores) prior to and after intervention (n = 150, degrees of freedom 148)

Knowledge variable	Score				95% CI		t	P
	Pre		Post					
	Mean	SD	Mean	SD	Lower	Upper		
Take varied and adequate food	0.47	0.50	0.87	0.33	−0.50	−0.31	−8.3	< 0.004
Avoid crowding	0.45	0.50	0.87	0.33	−0.52	−0.32	−8.6	< 0.006
Cover mouth and nose on coughing	0.52	0.50	0.91	0.29	−0.48	−0.29	−8.2	< 0.009
Avoid sharing dishes	0.51	0.50	0.87	0.33	−0.46	−0.26	−7.3	< 0.002
Open windows for fresh air	0.50	0.50	0.87	0.34	−0.46	−0.27	−7.4	< 0.001
Complete your treatment (compliance)	0.39	0.49	0.91	0.29	−0.60	−0.42	−11.0	< 0.006

CI = confidence interval; SD = standard deviation.

Acknowledgement

We thank the administration and physicians in charge of the chest clinic in Omdurman Military Medical Corps Hospital for allowing us to conduct this study and giving us free access to see and interview the patients over the study period.

Funding: None.

Competing interests: None declared.

Effet d'une intervention éducative sur la sensibilisation aux divers aspects de la tuberculose pulmonaire chez les patients atteints par cette maladie

Résumé

Contexte : La tuberculose constitue un problème de santé majeur dans le monde entier. Il est important de sensibiliser les patients tuberculeux à divers aspects de la maladie afin de contribuer à la lutte et à la prévention.

Objectifs : Il s'agissait d'une étude quasi expérimentale, préalable et postérieure à l'intervention, conçue pour évaluer l'effet d'une intervention éducative sur la sensibilisation des patients atteints de tuberculose pulmonaire.

Méthodes : Un questionnaire structuré couvrant divers faits sur la tuberculose pulmonaire a été utilisé dans la phase pré-intervention auprès de 150 patients tuberculeux qui étaient suivis dans un grand hôpital au Soudan ($r = 0,80$). Le même questionnaire a été réutilisé après que les patients ont suivi un programme de sensibilisation.

Résultats : Il y avait plus d'hommes (74 %) que de femmes. L'âge moyen était de 36,5 ans. La plupart des patients (86,6 %) avaient un certain niveau d'éducation, mais leurs connaissances sur les aspects de la tuberculose étaient généralement insuffisantes avant l'intervention. Ceci concernait notamment la nature de l'agent causal, ses modes de transmission et les mesures nécessaires pour lutter contre la maladie et la prévenir. Suite à l'intervention, il y a eu une amélioration significative dans tous les aspects des connaissances testées ($p < 0,007$).

Conclusion : Bien que le diagnostic de tuberculose des participants ait été confirmé et que ces derniers fassent l'objet d'un suivi clinique régulier, leurs connaissances sur divers aspects de la tuberculose étaient insuffisantes avant l'intervention éducative. Il faut redoubler d'efforts pour sensibiliser les patients tuberculeux à leur maladie pendant le traitement. Cette sensibilisation est importante pour aider à prévenir la maladie et à lutter contre cette dernière.

تأثير التدخل التثقيفي على الوعي بمختلف جوانب مرض السل الرئوي في المرضى المصابين به

كلثوم يوسف، مبروكة المكي، روزا خليل بابكر، حسن أبو عائشة

الخلاصة:

الخلفية: يمثل السل مشكلة صحية كبيرة في جميع أنحاء العالم. ويُعتبر إذكاء الوعي بمختلف جوانب مرض السل بين المصابين به أمراً مهماً للمساعدة في مكافحته والوقاية منه.

الأهداف: هدفت هذه الدراسة شبه التجريبية، والاختبارين القبلي والبعدي إلى تقييم تأثير التدخل التثقيفي على درجة وعي المرضى المصابين بالسل الرئوي.

طرق البحث: استُخدم استبيان منظم يغطي حقائق مختلفة عن السل الرئوي في المرحلة السابقة للتدخل، وشمل 150 مريضاً بالسل من الذين كانت تخضع حالتهم للمتابعة في أحد أكبر المستشفيات في السودان (معامل الارتباط = 0.80). وقد استُخدم نفس الاستبيان بعد أن أنهى المرضى برنامجاً للتوعية الثقافية.

النتائج: كانت نسبة الذكور (74%) أعلى من نسبة الإناث. وبلغ متوسط العمر 36.5 عاماً. وكان أغلب المرضى (86.6%) حاصلين على قدر من التعليم، إلا أن معرفتهم بجوانب مرض السل كانت ضئيلة بشكل عام قبل هذا التدخل. وشمل ذلك طبيعة الكائن المسبب للمرض، وطرق انتقال العدوى به، والتدابير اللازمة لمكافحته والوقاية منه. وعقب التدخل، سُجل تحسن ملحوظ في جميع جوانب المعرفة التي تم اختبارها (القيمة الاحتمالية > 0.007).

الاستنتاجات: على الرغم من تأكيد تشخيص السل لدى المشاركين الذين كانوا يقومون بمتابعة سريرية منتظمة، إلا أن معرفتهم بمختلف جوانب السل كانت ضئيلة قبل التدخل التثقيفي. وهناك حاجة إلى بذل مزيدٍ من الجهود لإذكاء وعي مرضى السل حول مرضهم أثناء تلقيهم العلاج. ويُعتبر هذا أمرٌ مهم للمساعدة في مكافحة المرض والوقاية منه.

References

1. Suryakantha AH. Community medicine with recent advances, 2nd ed. New Delhi: Jaypee Brothers Medical Publishers; 2010.
2. World Health Organization global tuberculosis report. Incidence of tuberculosis (per 100 000 people). New York: World Bank; 2015 (<https://data.worldbank.org/indicator/SH.TBS.INCD>, accessed 18 June 2020).
3. World Health Organization annual report 2003–2004. New Delhi: Ministry of Health and Family Welfare; 2004.
4. Alfaresi MS, Hag-Ali M. Susceptibility pattern and epidemiology of mycobacterium tuberculosis in United Emirati Hospital. *Open Microbial J.* 2010;4:1–4. doi:10.2174/1874285801004010001
5. Global tuberculosis report 2019. Geneva: World Health Organization; 2019 (<https://apps.who.int/iris/bitstream/handle/10665/329368/9789241565714-eng.pdf?ua=1>, accessed 20 July 2020).
6. Global tuberculosis control: epidemiology, strategy, financing (WHO Report 2009); with short update. Geneva: World Health Organization; 2009 (Annex 3: The Stop TB Strategy, case reports, treatment outcomes, and estimates of TB burden) (<https://www.ghdonline.org/drtb/discussion/global-tuberculosis-control-epidemiology-strategy-/>, accessed 20 July 2020).
7. Adam MA, Ali HM, Khalil EA. First-line drug resistance patterns of Mycobacterium tuberculosis complex isolates from re-treatment patients from Sudan. *J Tuberc Res.* 2016;4:98–104. doi:10.4236/jtr.2016.43012
8. Stop TB. Geneva: World Health Organization; 2014.
9. Abdallah TM, Ali AA. Epidemiology of tuberculosis in Eastern Sudan. *Asian Pac J Trop Biomed.* 2012;2(12) 999–1001. doi:10.1016/S2221-1691(13)60013-1
10. Abdallah TEM, Toum FET, Bashir OH, Mansoor TI, Yuosif MM, Elkhawad MA-E, et al. Epidemiology of extra pulmonary tuberculosis in Eastern Sudan. *Asian Pac J Trop Biomed.* 2015;5(6):505–8. <https://doi.org/10.1016/j.apjtb.2015.02.004>
11. Elsony A, Hassanain S, Aithole P. Towards a holistic perception of health: the interrelationships with identity and mobility. In: Hale S, Kadoda G, eds. Networks of knowledge production in Sudan; identities motilities and technology. New York: Rowman & Littlefield; 2016:115–34.
12. Hassanain SA, Edwards JK, Venables E, Ali E, Adam K, Hussien H, Elsony A. Conflict and Tuberculosis in Sudan: a 10-year review of the National Tuberculosis Programme, 2004–2014. *Confl Health.* 2018;16:12:18. doi:10.1186/s13031-018-0154-0
13. El-Sony AI, Baraka O, Enarson DA, Bjune G. Tuberculosis control in the Sudan against seemingly insurmountable odds. *Int J Tuberc Lung Dis.* 2000;4(7):657–64. PMID:10907769
14. Hassan AO, Olukolade R, Ogbuji QC, Afolabi S, Okwuonye LC, Kusimo OC, et al. Knowledge about tuberculosis: a precursor to effective TB control—findings from a follow-up national KAP study on tuberculosis among Nigerians. *Tuberc Res Treat.* 2017;2017:6309092. doi:10.1155/2017/6309092
15. Haggag SA, Abosrea MM, Eassa S. Improving community knowledge and attitude towards pulmonary tuberculosis in Zagazig district – Sharkia governorate through application of interventional health education program. *Afro-Egypt J Infect Endem Dis.* 2012;2(2):77–86.
16. Global tuberculosis control, a short update to the 2009 report. Geneva: World Health Organization, 2009.
17. Park K. Parks textbook of preventive and social medicine, 19th ed. Jabalpur: Banarsidas Bhanot Publishers; 2007.
18. Manderson L, Aagaard-Hansen J, Allotey P, Gyapong M, Sommerfeld J. Social research on neglected diseases of poverty: continuing and emerging themes. *PLoS Negl Trop Dis.* 2009;3(2):1–10. doi:10.1371/journal.pntd.0000332
19. Lewis SL, Heltkemper MM, Dirksen SR. Medical–surgical nursing: assessment and management of clinical problems, 6th ed. St. Louis: Mosby; 2004.
20. Mondal MNI, Shitan M. Impact of socio-health factors on life expectancy in the low and lower middle income countries. *Iran J Public Health.* 2013;42(12):1354–62. PMID:26060637
21. Singh MM, Bano T, Pagare D, Sharma N, Devi R Mehra M. Knowledge and attitude towards tuberculosis in a slum community of Delhi. *J Commun Dis.* 2002;34:203–14. PMID:14703055
22. Yousif KT, Al Khayat MI, Salman HD. Survey of knowledge, attitude and practices: enhanced response to TB ACSM, Iraq. *Middle East J Family Med.* 2009;7(1):23–38.
23. Mushtaq UM, Shahid U, Abdullah MH, Saeed A, Fatima O F, Shad AM, et al. Urban–rural inequities in knowledge, attitudes and practices regarding tuberculosis in two districts of Pakistan's Punjab province. *Int J Equity Health.* 2010;10:8. doi:10.1186/1475-9276-10-8
24. Mondal MNI, Hoque M. Nazrul MRK, Chowdhury J, Howard: Socio-demographic factors affecting knowledge level of Tuberculosis patients in Rajshahi City, Bangladesh, *Afr Health Sci.* 2014 December;14(4):855–65. doi:10.4314/ahs.v14i4.13
25. The Stop TB strategy: building on and enhancing DOTS to meet the TB-related Millennium Development Goals. Geneva: World Health Organization; 2006 (WHO/HTM/TB/2006.37; https://www.who.int/tb/publications/2006/who_htm_tb_2006_368.pdf, accessed 1 July 2020).
26. Nguipdop-Djomo P, Heldal E, Rodrigues LC, Abubakar I, Mangtani P. Duration of BCG protection against tuberculosis and change in effectiveness with time since vaccination in Norway: a retrospective population-based cohort study. *Lancet Infect Dis.* 2016;16:219–26. doi:10.1016/S1473-3099(15)00400-4
27. Ryan KJ, Ray CG. Sherris medical microbiology, 4th ed. New York: McGraw Hill; 2014.

Moroccan Arabic version of the Quality of Life Inventory in Epilepsy (QOLIE-31): translation, cultural adaptation and psychometric validation

Maryam Alami Merrouni,¹ Abdelkrim Janati Idrissi,² Abdelazizi Lamkaddem,³ Filankembo Kava A.C.² Samira El Fakir² and Zouhayr Souirti^{1,3}

¹Department of Neurology, Hassan-II Teaching Hospital, Fez, Morocco. ²Epidemiology and Clinical Research Laboratory, Faculty of Medicine and Pharmacy, Sidi Mohammed Ben Abdellah, University, Fez, Morocco. ³Clinical Neurosciences Laboratory, Faculty of Medicine and Pharmacy, Sidi Mohammed Ben Abdellah, University, Fez, Morocco (Correspondence to: A.J. Idrissi: janat318ia@gmail.com).

Abstract

Background: There is currently a growing concern to conduct health-related quality of life (HRQOL) studies among people with epilepsy in low- and middle-income countries, as most data have been derived from high-income countries in North America and Europe.

Aims: To translate, adapt and validate the Moroccan Arabic version of the QOL Inventory in Epilepsy-31 (MA-QOLIE-31) to evaluate HRQOL predictors in the Moroccan population with epilepsy.

Methods: Adaptation and validation of QOLIE-31 were performed in July 2018 among 118 patients with epilepsy in the Fez–Meknes region. The test was translated, adapted and validated into Arabic according to the Streiner & Norman recommendations. Acceptability, reliability, central tendency and validity of the QOLIE-31 were assessed.

Results: The acceptability and reproducibility were satisfactory and the internal consistency was strong (Cronbach α = 0.993). The mean (standard deviation) global score of QOL in the MA-QOLIE-31 was 68 (22.16). The scores in the subscales were 51 (36.88) for seizures worry, 48.86 (25.44) for overall QOL, 45.60 (26.73) for well-being, 41.28 (25.37) for energy and fatigue, 47.55 (28.33) for cognitive function, 66.83 (39.49) for medication effects and 52.44 (30.26) for social functioning.

Conclusions: The global score of QOL in Moroccan patients with epilepsy is similar to that in patients in low and middle-income countries. MA-QOLIE-31 will facilitate further studies in HRQOL in Morocco and Arabic-speaking countries.

Keywords: cultural adaptation, epilepsy, Morocco, quality of life, QOLIE-31.

Citation: Merrouni MA; Idrissi AJ; Lamkaddem A; Kava ACF; El Fakir S; Sourti Z. Moroccan Arabic version of the Quality of Life Inventory in Epilepsy (QOLIE-31): translation, cultural adaptation and psychometric validation. *East Mediterr Health J.* 2021;27(3):293-299 <https://doi.org/10.26719/2021.27.3.293>

Received: 29/10/19; accepted: 01/04/20

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>)

Introduction

There is currently a growing concern to conduct health-related quality of life (HRQOL) studies among people with epilepsy in low- and middle-income countries. Most data have been derived from high-income countries in North America and Europe (1). People with epilepsy often have a concern about seizure recurrence, even in those with few or no current seizures. However, the medical care of people with epilepsy should not be limited to stopping or reducing seizures, but should also focus on QOL, as the disorder can have a major impact on that. Epilepsy has physical, psychological and cognitive consequences. Furthermore, adults with epilepsy have many social concerns (2–4), like restrictions in driving and professional constraints (5–7).

There are almost no studies on epilepsy incidence and prevalence in Morocco. According to a study performed in Casablanca in 1998, 1.1% of the population was affected by epilepsy. There is poor knowledge about epilepsy among teachers in Morocco, and this unawareness negatively affects teachers' attitudes towards people with epilepsy (8).

The internationally used Quality of Life in Epilepsy Inventory with 31 items (QOLIE-31), was originally

developed and validated in the United States of America (USA) (9) and has been shown to respond to change (10, 11). In a broad intercultural adaptation programme, QOLIE-31 has been translated into many languages, including Spanish (12), German (13), Hungarian (14), Georgian (15), French (16), Serbian (17), Persian (18) and Turkish (19).

Although many instruments have been developed for evaluation of QOL (20,21), none has been validated in Morocco until now. The availability of such an inventory in the Arabic language, according to the cultural specificities of Morocco, is essential for conducting future studies about QOL in people with epilepsy. The objective of this study was to translate, adapt and validate the Moroccan Arabic version of QOLIE-31 (MA-QOLIE-31) to evaluate HRQOL predictors in Moroccan people with epilepsy.

Methods

Characteristics of the original version of QOLIE-31

QOLIE-31 is the shortened form of QOLIE-89. QOLIE-31 is a specific instrument for rapid evaluation of the main

QOL domains in adults with epilepsy. QOLIE-31 is a 31-item questionnaire organized in 7 subscales: seizure worry (SW), overall QOL (OQL), emotional well-being (EWB), energy and fatigue (EF), cognitive function (CF), medication effects (ME) and social functioning (SF). We did not remove the driving question from MA-QOLIE-31, even though most participants did not have access to motor vehicles.

Translation and cultural adaptation of QOLIE-31

We translated the QOLIE-31 into Moroccan Arabic language. We followed the published guidelines for cross-cultural adaptation of HRQOL measurements (22,23). Two bilingual translators initially translated the questions in the original version of QOLIE-31 into Moroccan Arabic (Appendices 1 and 2). Then we submitted the translated version to a committee of neurologists and epidemiologists, to obtain the initial Moroccan Arabic version. We applied MA-QOLIE-31 to volunteers with epilepsy that agreed to participate and give their opinion. Two examiners noted the comments and suggestions of the participants. The second Moroccan Arabic version was compiled after this initial assessment. Two translators with a good knowledge in English, not familiar with QOLIE-31, performed the subsequent back translation into English. The committee of professionals and translators performed a comparison with the original version to check the differences, and reviewed and adjusted the translation accordingly to obtain the final MA-QOLIE-31.

Patient recruitment

Between December 2016 and July 2018, adult outpatients who were followed up at an epilepsy centre over the previous month while living in the Fez-Meknes Region were included in the study. The sample size was defined according to a Streiner curve (24), for an intraclass correlation coefficient (ICC) of 0.70 and a precision of ± 0.10 . Patients were eligible if they were aged ≥ 18 years, had epilepsy and spoke Moroccan Arabic. Individuals with intellectual deficiency and psychiatric disorders responsible for communication difficulty were excluded. Ethical approval (203/18) was obtained from the ethics committees in the University Hospital Center Hassan II in Fez and all the participants were informed of the conditions related to the study and gave their informed consent.

Data collection

As almost patients in our sample were illiterate, 2 interviewers administered the questionnaire. Their task was to read out the questions and mark the chosen answers for this category of patients without providing any input. They administered MA-QOLIE-31 to all participants. We randomly defined the order of interviewers. They re-administered the same questionnaire after 7 days to assess reproducibility. Participants provided sociodemographic (age, sex, monthly income and physical activity) and clinical data (average follow-up, type of epilepsy, frequency

of seizures, treatment resistance, age at first seizure and therapeutic support).

Scoring

MA-QOLIE-31 included 7 multi-item scales: SW (5 items), EWB (5 items), EF (4 items), SF (5 items), CF (6 items), ME (3 items) and OQL (2 items). The scoring procedure first converted the numerical values to point scores of 0–100, with higher converted scores reflecting better QOL. Next, we entered the converted score for each item in a column labelled “Subtotal”. Then, we summed the subtotal scores for each scale and entered these values in places marked “Total”. Finally, we divided each Total by the number of items that the participant answered within each scale to obtain the “Final Score”. An overall score was obtained using a weighted mean of the multi-item scale scores. We calculated the global and subscale scores (range 0–100) according to the Scoring Manual of QOLIE-31 (version 1.0) (25), with higher scores indicating better QOL.

Statistical analysis

Descriptive statistics were generated to evaluate the scores' distribution (i.e. mean, range, floor, and ceiling effects). For each scale of MA-QOLIE-31, if $> 20\%$ of the participants reported lowest or highest possible score, the floor or ceiling effects existed. The reliability of the multi-item scales was assessed by the Cronbach α coefficient. A value of ≥ 0.70 was considered as adequate (26). The test–retest reliability and interobserver reliability were estimated by calculating the ICC for each of the score components of MA-QOLIE-31. Multitrait scaling analysis was used to examine item convergence and item discrimination. Evidence of item convergence was defined as a correlation of ≥ 0.40 between an item and its own scale. Item discrimination was satisfactory if each item had a substantially higher correlation with its hypothesized scale than with scales measuring other concepts. The data were analysed using SPSS 17.0.

Results

Sociodemographic and clinical data

We administered the questionnaire to 120 participants. Two patients did not respond to the retest and they were automatically excluded. We analysed 118 questionnaires. The median age of onset of epilepsy was 32.70 (standard deviation 13.1) years with a mean epilepsy duration of 15.14 (10.41) years. Table 1 shows the sociodemographic characteristics of the participants. The mean time to complete the questionnaire was 13.5 minutes. All items showed no missing responses.

Central tendency

The central tendency is used to identify the central position for a set of data. Table 2 summarizes the data on the central tendency and variability of MA-QOLIE-31. The scores for different scales ranged from 41.3 to 66.8. The EF scale had the lowest score (median 40) and the ME

Table 1 Sociodemographic and clinical data.

Characteristics	n (%)
Sex	
Female	55 (46.61)
Male	63 (53.38)
Type of epilepsy	
Generalized	65 (55.08)
Focal	53 (44.91)
Refractory to antiepileptic drugs	
Yes	38 (32.20)
No	80 (67.79)
Duration of epilepsy, yr, mean (SD)	15.14 (10.41)
No. of treatments	
1	47 (39.83)
2	43 (36.44)
3	24 (20.33)
4	4 (3.38)
No. of seizures per month	
0	40 (33.89)
> 30	0
1–5	55 (46.61)
5–10	1 (0.84)
10–15	12 (10.16)
15–20	10 (8.47)
Monthly income (US dollars)	
< 100	80 (67.79)
100–200	19 (16.10)
200–300	1 (0.84)
300–400	3 (2.54)
> 500	15 (12.71)
Sports activity (days per week)	
0	86 (72.88)
1	24 (20.33)
2	4 (3.38)
3	3 (2.54)
> 3	1 (0.84)

SD = standard deviation.

scale had the highest score (88.9). The highest ceiling effect was shown in the ME scale.

Reliability

Table 3 shows the reliability of MA-QOLIE-31. The Cronbach α coefficient ranged from 0.98 to 0.99. This coefficient was high for the entire questionnaire (0.993). The ICC between 2 interviewers ranged from 0.96 for the OQL to 0.99 for ME. We collected test–retest data from 69 patients to whom the questionnaire was administered twice (during the baseline visit and 7 days later). The test–retest reliability was assessed using ICC, which ranged from 0.93 for the OQL to 0.98 for the CF.

Validity

The study committee validated the appearance and content of MA-QOLIE-31. Table 4 shows the results of subscales analysis. All items exceeded the 0.4 criteria for convergent validity on all subscales. The CF subscale exhibited 100% item-convergence (r : 0.57–0.85) and 91.66% item-discrimination (r : 0.003–0.73).

Discussion

QOL instruments have seldom been used in clinical practice to assess patients with epilepsy in Morocco. We still rely on seizure frequency to measure the impact of epilepsy on HRQOL. The objective of the present study was to provide a translated and adapted Moroccan Arabic version of QOLIE-31 to study 118 people with epilepsy.

The acceptability of MA-QOLIE-13 was high, as patients had to fill out the questionnaire in Moroccan Arabic with the interviewer. Also, the psychometric properties and reproducibility were satisfactory and similar to studies in other countries (9, 13, 16). Our results were similar to those in the USA (9), Germany (13), Spain (12) and other countries (Table 5). Surprisingly, our global and individual scores were higher than those found in previous studies. The expectations related to convergent validation disclosed high correlations with the different domains of MA-QOLIE-31. Our results confirm the reliability and validity of MA-QOLIE-13, but the higher values may be explained by the short intervening period between test and retest in comparison with other studies.

The HRQOL among our population may have been influenced by seizure frequency, number of medications and economic conditions. First, the frequency of seizures is still considered the cornerstone to measure QOL in

Table 2 Central tendency and variability of the Moroccan version of the QOLIE-31

Subscales	No. of items	Mean	Median	SD	Floor effect (%)	Ceiling effect (%)
EWB	5	45.6	52.0	26.8	7.7	0.9
SF	5	52.4	50.0	30.3	5.1	6.8
EF	4	41.3	40.0	25.4	9.4	0.9
CF	6	47.6	43.9	28.3	4.3	4.3
SW	5	51.0	50.0	36.9	12.0	15.4
ME	3	66.8	88.9	39.5	16.2	48.7
OQL	2	48.9	50.0	25.4	7.7	0.9

CF = cognitive function; EF = energy and fatigue; EWB = emotional well-being; ME = medication effects; OQL = overall quality of life; QOLIE-31 = Quality of Life Inventory in Epilepsy; SD = standard deviation; SF = social functioning; SW = seizure worry.

Table 3 Internal consistency and reliability of the QOLIE-31

Subscales	Cronbach α coefficient	Interobserver ICC (95% CI)	Test-retest ICC (95% CI)
SW	0.99	0.99 (0.98–0.99)	0.98 (0.97–0.99)
OQL	0.98	0.96 (0.95–0.97)	0.93 (0.89–0.95)
EWB	0.99	0.98 (0.97–0.98)	0.96 (0.94–0.98)
EF	0.98	0.97 (0.96–0.98)	0.96 (0.94–0.98)
CF	0.99	0.98 (0.98–0.99)	0.98 (0.97–0.99)
ME	0.99	0.99 (0.98–0.99)	0.98 (0.96–0.98)
SF	0.99	0.99 (0.98–0.99)	0.98 (0.97–0.98)

CF = cognitive function; CI = confidence interval; EF = energy and fatigue; EWB = emotional well-being; ICC = intraclass correlation coefficient; ME = medication effects; OQL = overall quality of life; QOLIE-31 = Quality of Life Inventory in Epilepsy; SD = standard deviation; SF = social functioning; SW = seizure worry.

Moroccan patients with epilepsy. Accordingly, only patients with drug-resistant epilepsy were considered to have poor QOL. Second, patients taking more than one drug were thought to have a similar condition with a lower QOL, although there is no local study to support these views. The evaluation of risk factors for poor QOL was not the aim of the present study; however, the validity of MA-QOLIE-31 will be the main basis for conducting future studies. Finally, the global score (Table 5), was lower than that in the original American (9), French (16) and Spanish (12) studies. The global score for MA-QOLIE-13 was similar to that in middle- and low-income countries (27). The Moroccan scores were similar to those in Bhutan (28). The MA-QOLIE-31 scores also varied significantly with monthly income. People with income < 100 US dollars had lower scores than those with an income > 500 US dollars. A Hungarian study showed better QOL among active people than disabled patients receiving a disability pension (14).

The EF domain had the lowest mean overall score in MA-QOLIE-31. The large proportion of patients with focal drug-resistant epilepsy may explain this result (29). They had high seizure frequency and were taking > 1 antiepileptic drug. The ME domain had the highest mean overall QOL score. The Moroccan population,

especially people with low income, may have a cultural pharmacophilia that explains the high satisfaction reached by medication intake. Access to medical care remains difficult in our context as in low- and middle-income countries (30,31).

The scores for SF were moderate, even though the population did not undertake sufficient physical activity. The majority did not drive, although they did not have social limitations. They should have a good QOL with family and close friends as found in Moroccan culture.

The Cronbach α coefficients for overall scores in the present study were similar to those in American (9), German (15) and Spanish (14) studies. Cronbach α coefficients for individual items were also similar to those previously found in other languages. The discriminatory validation was satisfactory and in agreement with other studies. Expectations related to convergent validation disclosed high correlations with the different domains of MA-QOLIE-31. The results confirm the reliability and validation of the Moroccan Arabic translation of QOLIE-13 and suggest that differences in item and scale scores are not attributable to inadequate translation.

The short period between the test and retest may be a limitation of this study and might explain in part the high values of the coefficients obtained.

Table 4. Convergence and discrimination of the QOLIE-31 subscales

Subscales	Convergence (r, % success)	Discrimination (r, % success)
SW	0.70–0.90, 100	0.10–0.42, 100
OQL	0.89–0.91, 100	0.06–0.64, 100
EWB	0.76–0.92, 100	0.04–0.69, 100
EF	0.75–0.87, 100	0.02–0.69, 100
CF	0.57–0.85, 100	0.003–0.73, 91.66
ME	0.82–0.96, 100	0.006–0.41, 100
SF	0.69–0.81, 100	0.14–0.64, 100

CF = cognitive function; EF = energy and fatigue; EWB = emotional well-being; ME = medication effects; OQL = overall quality of life; QOLIE-31 = Quality of Life Inventory in Epilepsy; SD = standard deviation; SF = social functioning; SW = seizure worry.

Conclusion

We translated and validated a Moroccan Arabic language version of the international multi-item epilepsy inventory QOLIE-31, according to the international recommendations. The mean overall score for QOL in 118 Moroccan patients with epilepsy was similar to that in low- and middle-income countries. Nevertheless, the predictors of QOL in the Moroccan context are not yet well known but further studies should answer these pending questions. The availability of such a validated QOL instrument related to epilepsy will facilitate larger studies in Morocco and other Arabic-speaking countries.

Table 5 Results of QOLIE-31 scores in Moroccan Arabic version and other languages [mean score (SD)]

	Moroccan Arabic	French	American English	Spanish	German	Hungarian	Georgian
SW	51.0 (36.8)	58.7 (30.1)	58 (26)	51.5 (29.7)	N/A	54.0 (28.5)	N/A
OQL	48.8 (25.4)	64.0 (21.1)	67 (18)	68.3 (16.9)	N/A	55.5 (19.3)	N/A
EWB	45.6 (26.7)	57.6 (20.6)	67 (19)	61.8 (19.1)	N/A	58.3 (18.5)	N/A
EF	41.2 (25.3)	51.7 (19.8)	55 (12)	60.9 (20.7)	N/A	49.7 (17.7)	N/A
CF	47.5 (28.3)	61.7 (25.4)	60 (23)	60.3 (23.8)	N/A	59.3 (19.5)	N/A
ME	66.8 (39.4)	65.5 (30.1)	55 (31)	60.3 (29.1)	N/A	57.4 (31.1)	N/A
SF	52.4 (30.2)	69.4 (26.4)	67 (21)	66.4 (28.0)	N/A	56.8 (23.6)	N/A
Global score	68.0 (22.1)	61.9 (19.0)	63 (16)	61.7 (17.3)	N/A	N/A	N/A
Cronbach α							
Global score	0.99	0.89	0.93	0.92	0.94	N/A	0.77
Subscale range	0.98–0.99	0.71–0.86	0.77–0.85	0.55–0.83	0.76–0.90	N/A	0.71–0.82
Test–retest							
Global score	0.97	0.86	0.89	0.90	0.79	N/A	N/A
Sub-scale range	0.93–0.98	0.82–0.85	0.64–0.89	0.62–0.84	0.59–0.78	N/A	N/A

Results are mean (standard deviation). CF = cognitive function; EF = energy and fatigue; EWB = emotional well-being; ME = medication effects; NA = not applicable; OQL = overall quality of life; QOLIE-31 = Quality of Life Inventory in Epilepsy; SD = standard deviation; SF = social functioning; SW = seizure worry.

Acknowledgement

We thank Joyce A. Cramer, the author of the QOLIE-31, for her agreement and for providing the original version of the QOLIE-31. We thank El Hachimi M, Ennefida R and Benbrahim F for their help in this work; also, we thank Aalouane R, Hajjioui A, Tachfoui N and Kaplan P for their critical lecture of the manuscript.

Funding: None.

Competing interests: None declared.

Version arabe marocaine de l'inventaire de la qualité de vie chez les patients épileptiques (QOLIE-31) : traduction, adaptation culturelle et validation psychométrique

Résumé

Contexte : La réalisation d'études sur la qualité de vie liée à la santé (QVLS) chez les personnes atteintes d'épilepsie dans les pays à revenu faible et intermédiaire est un motif de préoccupation de plus en plus important, car la plupart des données proviennent de pays à revenu élevé en Amérique du Nord et en Europe.

Objectifs : Traduire, adapter et valider la version arabe marocaine de l'inventaire de la qualité de vie chez les patients épileptiques (QOLIE-31) afin d'évaluer les facteurs prédictifs de la qualité de vie liée à la santé dans la population marocaine épileptique.

Méthodes : L'adaptation et la validation de l'inventaire QOLIE-31 ont été réalisées en juillet 2018 auprès de 118 patients épileptiques de la région de Fès-Meknès. Le test a été traduit, adapté et validé en arabe selon les recommandations de Streiner et Norman (2008). L'acceptabilité, la fiabilité, la tendance centrale et la validité du QOLIE-31 ont été évaluées.

Résultats : L'acceptabilité et la reproductibilité sont satisfaisantes et la cohérence interne est forte (α de Cronbach = 0,993). Le score global moyen (écart type) de la qualité de vie dans la version marocaine du QOLIE-31 était de 68 (22,16). Les scores des sous-échelles étaient 51 (36,88) pour les crises convulsives, 48,86 (25,44) pour la qualité de vie globale, 45,60 (26,73) pour le bien-être, 41,28 (25,37) pour l'énergie et la fatigue, 47,55 (28,33) pour la fonction cognitive, 66,83 (39,49) pour les effets médicamenteux et 52,44 (30,26) pour le fonctionnement social.

Conclusions : Le score global de la qualité de vie des patients marocains épileptiques est similaire à celui des patients des pays à revenu faible et intermédiaire. La version marocaine du QOLIE-31 permettra de réaliser davantage d'études sur la qualité de vie liée à la santé au Maroc ainsi que dans les pays arabophones.

النسخة المغربية العربية لاستمارة تقييم جودة الحياة للمصابين بالصرع : الترجمة، والمواءمة الثقافية، والمصادقة على القياسات النفسية

مريم علمي مروني، عبد الكريم جناتي ادريسي، عبد العزيز لمقدم، فيلانكيو كافا أ. س، سميرة الفقير، زهير سويرتي

الخلاصة:

الخلفية: يوجد حالياً قلقٌ متزايدٌ من إجراء دراسات جودة الحياة المرتبطة بالصحة بين الأشخاص المصابين بالصرع في البلدان المنخفضة والمتوسطة الدخل، إذ أن معظم البيانات كانت مستمدة من البلدان المرتفعة الدخل في أمريكا الشمالية وأوروبا.

الأهداف: هدفت هذه الدراسة إلى ترجمة النسخة المغربية العربية لاستمارة تقييم جودة الحياة للمصابين بالصرع ومواءمتها والتحقق من صحتها لتقييم العوامل المنبئة بجودة الحياة المرتبطة بالصحة لدى السكان المغاربة المصابين بالصرع.

طرق البحث: أجريت مواءمة النسخة والتحقق من صحتها في يوليو/ تموز 2018 بين 118 مريضاً بالصرع في جهة فاس-مكناس. وتُرجم الاختبار إلى اللغة العربية وتمت مواءمته والتحقق من صحته وفقاً لتوصيات ستيرنير. وخضعت النسخة للتقييم من حيث مقبوليتها وموثوقيتها وتوجهها المركزي وصحتها.

النتائج: كان مستوى المقبولية والنتائج مرضياً، وكان الاتساق الداخلي قوياً (معامل ألفا كرونباخ = 0.993). وبلغ متوسط (الانحراف المعياري) للدرجة العالمية لجودة الحياة في النسخة 68 (22.16). وكانت الدرجات في المقاييس الفرعية 51 (36.88) للقلق من نوبات الصرع، و48.86 (25.44) لجودة الحياة ككل، و45.60 (26.73) للرّفاء، و41.28 (25.37) للطاقة والتعب، و47.55 (28.33) للوظائف المعرفية، و66.83 (39.49) للتأثيرات الدوائية، و52.44 (30.26) للأداء الاجتماعي.

الاستنتاجات: تماثل الدرجة العالمية لجودة الحياة لدى المرضى المغاربة المصابين بالصرع تلك الخاصة بالمرضى في البلدان المنخفضة والمتوسطة الدخل. ومن شأن النسخة أن تيسر إجراء مزيدٍ من الدراسات في مجال جودة الحياة المرتبطة بالصحة في المغرب والبلدان الناطقة باللغة العربية.

References

1. Taylor RS, Sander JW, Taylor RJ, Baker GA. Predictors of health-related quality of life and costs in adults with epilepsy: a systematic review. *Epilepsia*. 2011 Dec;52(12):2168–80. <http://dx.doi.org/10.1111/j.1528-1167.2011.03213.x> PMID:21883177
2. Cano-López I, Hampel KG, Garcés M, Villanueva V, González-Bono E. Quality of life in drug-resistant epilepsy: relationships with negative affectivity, memory, somatic symptoms and social support. *J Psychosom Res*. 2018 Nov;114:31–7. <http://dx.doi.org/10.1016/j.jpsychores.2018.09.001> PMID:30314576
3. Ferreira MCG, Tura LFR, Silva RC da, Ferreira M de A. Social representations of older adults regarding quality of life. *Rev Bras Enferm*. 2017 Jul–Aug;70(4):806–13. <http://dx.doi.org/10.1590/0034-7167-2017-0097> PMID:28793112
4. Yogarajah M, Mula M. Social cognition, psychiatric comorbidities, and quality of life in adults with epilepsy. *Epilepsy Behav*. 2019 Nov;100(Pt B):106321. <http://dx.doi.org/10.1016/j.yebeh.2019.05.017> PMID:31253548
5. L Devlin A, Odell M, L Charlton J, Koppel S. Epilepsy and driving: current status of research. *Epilepsy Res*. 2012 Dec;102(3):135–52. <http://dx.doi.org/10.1016/j.eplepsyres.2012.08.003> PMID:22981339
6. Wo MCM, Lim KS, Choo WY, Tan CT. Factors affecting the employability in people with epilepsy. *Epilepsy Res*. 2016 Dec;128:6–11. <http://dx.doi.org/10.1016/j.eplepsyres.2016.10.003> PMID:27792885
7. Wo MCM, Lim KS, Choo WY, Tan CT. Employability in people with epilepsy: a systematic review. *Epilepsy Res*. 2015 Oct;116:67–78. <http://dx.doi.org/10.1016/j.eplepsyres.2015.06.016> PMID:26354169
8. Janati Idrissi A, Lamkaddem A, Boujraf S, Souirti Z. Awareness and attitudes toward persons with epilepsy among teachers: a Moroccan study. *Epilepsy Behav*. 2020 Jan;102:106633. <https://doi.org/10.1016/j.yebeh.2019.106633>
9. Cramer JA, Perrine K, Devinsky O, Bryant-Comstock L, Meador K, Hermann B. Development and cross-cultural translations of a 31-item quality of life in epilepsy inventory. *Epilepsia*. 1998 Jan;39(1):81–8. <http://dx.doi.org/10.1111/j.1528-1157.1998.tb01278.x> PMID:9578017
10. Birbeck GL, Hays RD, Cui X, Vickrey BG. Seizure reduction and quality of life improvements in people with epilepsy. *Epilepsia*. 2002 May;43(5):535–8. <http://dx.doi.org/10.1046/j.1528-1157.2002.32201.x> PMID:12027916
11. Wiebe S, Matijevic S, Eliasziw M, Derry PA. Clinically important change in quality of life in epilepsy. *J Neurol Neurosurg Psychiatry*. 2002 Aug;73(2):116–20. <http://dx.doi.org/10.1136/jnnp.73.2.116> PMID:12122166
12. Torres X, Arroyo S, Araya S, de Pablo J. The Spanish Version of the Quality-of-Life in Epilepsy Inventory (QOLIE-31): translation, validity, and reliability. *Epilepsia*. 1999 Sep;40(9):1299–304. <http://dx.doi.org/10.1111/j.1528-1157.1999.tb00861.x> PMID:10487195

13. May TW, Pfäfflin M, Cramer JA. Psychometric properties of the German translation of the QOLIE-31. *Epilepsy Behav.* 2001 Apr;2(2):106–14. <http://dx.doi.org/10.1006/ebbeh.2001.0170> PMID:12609192
14. Lám J, Rózsavölgyi M, Soós G, Vincze Z, Rajna P. Quality of life of patients with epilepsy (Hungarian survey). *Seizure.* 2001 Mar;10(2):100–6. <https://doi.org/10.1053/seiz.2000.0461>
15. Djibuti M, Shakarishvili R. Influence of clinical, demographic, and socioeconomic variables on quality of life in patients with epilepsy: findings from Georgian study. *J Neurol Neurosurg Psychiatry.* 2003 May;74(5):570–3. <http://dx.doi.org/10.1136/jnnp.74.5.570> PMID:12700294
16. Picot M-C, Crespel A, Daurès J-P, Baldy-Moulinier M, El Hasnaoui A. Psychometric validation of the French version of the quality of life in epilepsy inventory (QOLIE-31): comparison with a generic health-related quality of life questionnaire. *Epileptic Disord.* 2004 Dec;6(4):275–85. PMID:15634625
17. Martinović Ž, Milovanović M, Tošković O, Jovanović M, Buder N, Simonović P, et al. Psychometric evaluation of the Serbian version of the Quality of Life in Epilepsy Inventory-31 (QOLIE-31). *Seizure.* 2010 Oct;19(8):517–24. <http://dx.doi.org/10.1016/j.seizure.2010.07.012>
18. Mohammadi N, Kian S, Davoudi F, Nia SMAA, Nojomi M. Psychometric evaluation of the Persian version of the quality of life in epilepsy inventory-31. *Iran J Neurol.* 2013;12(4):144–8. PMID:24250924
19. Mollaoglu M, Durna Z, Bolayir E. Validity and reliability of the Quality of Life in Epilepsy Inventory (QOLIE-31) for Turkey. *Noro Psikiyatri Arsivi.* 2015 Sep;52(3):289–95. <http://dx.doi.org/10.5152/npa.2015.8727> PMID:28360726
20. Baker GA, Smith DF, Dewey M, Jacoby A, Chadwick DW. The initial development of a health-related quality of life model as an outcome measure in epilepsy. *Epilepsy Res.* 1993 Sep;16(1):65–81. [http://dx.doi.org/10.1016/0920-1211\(93\)90041-5](http://dx.doi.org/10.1016/0920-1211(93)90041-5) PMID:8243441
21. Vickrey BG, Hays RD, Graber J, Rausch R, Engel J, Brook RH. A health-related quality of life instrument for patients evaluated for epilepsy surgery. *Med Care.* 1992 Apr;30(4):299–319. <http://dx.doi.org/10.1097/00005650-199204000-00002> PMID:1556879
22. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine.* 2000 Dec 15;25(24):3186–91. <http://dx.doi.org/10.1097/00007632-200012150-00014> PMID:11124735
23. Guillemin F, Bombardier C, Beaton D. Cross-cultural adaptation of health-related quality of life measures: literature review and proposed guidelines. *J Clin Epidemiol.* 1993 Dec;46(12):1417–32. [http://dx.doi.org/10.1016/0895-4356\(93\)90142-n](http://dx.doi.org/10.1016/0895-4356(93)90142-n) PMID:8263569
24. Streiner DL, Norman GR. Health measurement scales: a practical guide to their development and use. Oxford University Press; 2008.
25. Quality of Life in Epilepsy Inventory (QOLIE-89 and QOLIE-31) [website]. RAND Health Care (https://www.rand.org/health-care/surveys_tools/qolie.html, accessed 24 September 2020).
26. Cronbach LJ. Coefficient alpha and the internal structure of tests. *Psychometrika.* 1951;16(3):297–334. <https://doi.org/10.1007/BF02310555>
27. Saadi A, Patenaude B, Mateen FJ. Quality of life in epilepsy-31 inventory (QOLIE-31) scores: A global comparison. *Epilepsy Behav.* 2016 Dec;65:13–7. <http://dx.doi.org/10.1016/j.yebeh.2016.09.032> PMID:27838562
28. Saadi A, Patenaude B, Nirola DK, Deki S, Tshering L, Clark S, et al. Quality of life in epilepsy in Bhutan. *Seizure.* 2016 Jul;39:44–8. <http://dx.doi.org/10.1016/j.seizure.2016.05.001> PMID:27257785
29. Puri I, Dash D, Padma MV, Tripathi M. Quality of life and its determinants in adult drug refractory epilepsy patients who were not candidates for epilepsy surgery: a correlational study. *J Epilepsy Res.* 2018 Dec 31;8(2):81–6. <http://dx.doi.org/10.14581/jer.18013> PMID:30809501
30. Kotsopoulos IAW, Evers SMAA, Ament AJHA, Kessels FGH, de Krom MCTFM, Twellaar M, et al. The costs of epilepsy in three different populations of patients with epilepsy. *Epilepsy Res.* 2003 May;54(2–3):131–40. [https://doi.org/10.1016/S0920-1211\(03\)00062-7](https://doi.org/10.1016/S0920-1211(03)00062-7)
31. Wijnen BFM, Schat SL, de Kinderen RJA, Colon AJ, Ossenblok PPW, Evers SMAA. Burden of disease of people with epilepsy during an optimized diagnostic trajectory: costs and quality of life. *Epilepsy Res.* 2018 Oct;146:87–93. <http://dx.doi.org/10.1016/j.eplepsyres.2018.07.024> PMID:30086483

Views of stakeholders on factors influencing shared decision-making in the Eastern Mediterranean Region: a systematic review

Nouf Alsulamy,^{1,2} Andrew Lee,¹ Praveen Thokala¹ and Tourkiah Alessa^{1,3}

¹School of Health and Related Research (SchARR), University of Sheffield Regent, Sheffield, United Kingdom. ²College of Business, University of Jeddah, Jeddah, Saudi Arabia. ³Biomedical Technology Department, College of Applied Medical Sciences, King Saud University, Riyadh, Saudi Arabia. (Correspondence to: Nouf Alsulamy: naalsulamy1@sheffield.ac.uk; n.alsulamy@gmail.com).

Abstract

Background: Shared decision-making is advocated as a key component of patient-centred care and associated with many benefits that improve patient outcomes. However, shared decision-making is not yet embedded in clinical practice and confronts many barriers that hinder its implementation especially in countries of the World Health Organization (WHO) Eastern Mediterranean Region.

Aims: We conducted a systematic review to identify and understand factors influencing shared decision-making in the Region.

Methods: We searched PsycINFO, CINAHL, PubMed, Medline, Scopus and Saudi Digital Library for articles published between January 1997 and February 2019. Studies conducted in the Region that reported barriers, facilitators, experiences, expectations and attitudes to shared decision-making were included. The Mixed Methods Appraisal Tool (MMAT) was used to assess the methodological quality of the studies in this review.

Results: Of the 1813 initial articles retrieved, 19 eligible articles were identified. The main factors that emerged were grouped under three broad themes: participant factors (patients/families and physicians); consultation factors (relationship between participants, engaging patients, evaluating preferences, introducing options, providing information, and decision making); and healthcare system factors (organizational characteristics, time constraints, continuity of care, and healthcare resources).

Conclusions: There is growing interest in shared decision-making in several countries in the Region. However, there are many existing barriers that hinder the implementation of shared decision-making. These need to be addressed before shared decision-making can be fully adopted in these countries.

Keywords: shared decision-making, Eastern Mediterranean Region, barriers, facilitators, implementation.

Citation: Alsulamy N; Lee A; Thokala P; Alessa T. Views of stakeholders on factors influencing shared decision-making in the Eastern Mediterranean Region: a systematic review. *East Mediterr Health J.* 2021;27(3):300-311 <https://doi.org/10.26719/emhj.20.139>

Received: 09/12/19; accepted: 05/04/20

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Introduction

Shared decision-making (SDM) is an approach in which physicians and patients work jointly, utilizing the best available evidence, to make decisions that considers the patients' preferences (1). SDM is considered to be a key component of patient-centred care and corroborated in high-level policy in developed countries (2,3). Patients and clinicians in western and nonwestern countries show positive attitudes and preferences toward SDM (4–6). According to The Health Foundation (7), there is robust evidence of benefits from implementing SDM. These include greater treatment adherence, better patient confidence and coping skills, and reductions in the demand for major surgical interventions.

There is also a large and growing body of literature on the factors that influence SDM and its implementation, and many reviews have been conducted that provide comprehensive evidence on this topic (8–11). However, most of the reviews in the literature are from high-income settings, predominantly in western countries. Little is known about SDM in the World Health

Organization (WHO) Eastern Mediterranean Region and it is not clear which factors may hinder or facilitate the implementation of it in these countries. Similarly, in many of the high-income western countries, the concept of patient-centred care or SDM is being integrated into health systems, but this is not yet the case in the Region and other developing countries.

The Region comprises 21 countries as defined by WHO (12). Despite some cultural similarities (Islamic culture) and commonalities in historical background, there is also a high degree of diversity when it comes to developmental profiles and socioeconomic conditions that invariably affects the maturity of health systems and population health status in the different countries in the Region (13). Notably, the Region includes high-middle-, lower- and lower-middle-income countries (14). Moreover, the culture, social context, and health sector leadership and governance in these countries are different to those in western countries. If the desired aim is to promote and facilitate the integration of SDM into existing healthcare systems in the Region, there is a need to investigate and better understand the perception

of SDM and challenges of implementing SDM in these countries. Therefore, we carried out a systematic review of the literature that sought to identify and understand the factors influencing SDM in the Region.

Methods

Search strategy

The following databases were searched for relevant articles published between 1997 and February 2019: PsycINFO, CINAHL, PubMed, Medline, Scopus, Saudi Digital Library, Open Grey, EThOS, Social Care Online. The search included other sources such as reference lists of included studies and articles citing the included studies. The searches were not restricted by language and relevant articles were translated into English. The search terms were built with help from one of the information specialists. We searched for articles on SDM or related concepts such as “patient engagement”, “patient-centred care”, “patient activation”, “decision support” and “decision aids”. Full details of the search strategies in (Medline, PsycINFO, CINAHL, Scopus and PubMed) can be found in Supplementary File 1. Other electronic databases were searched using keywords from the search strategies.

Inclusion criteria

The eligible studies were all qualitative, quantitative, or mixed-method studies that mentioned SDM or associated terms. Participants included were patients, families, healthcare and medical professionals, facility managers, and policy-makers. The intervention was SDM or its tools, such as decision aids, as they are tools often used in the SDM process. Studies were included if they reported perceptions, barriers, facilitators, experiences, expectations or attitudes to SDM. All healthcare settings in countries in the WHO Eastern Mediterranean Region were included.

Study selection

Electronic search results were exported to reference management software (Mendeley) and duplicated records were identified and excluded. Two reviewers (NA and TA) screened the titles and abstracts, and then full-text articles for exclusion or possible inclusion. Any uncertainty over inclusion of any article was resolved through discussion with researchers PT and AL and agreed by consensus.

Data extraction and quality assessment

One reviewer (NA) extracted data and assessed the quality of the included studies. The other reviewer (TA) verified the accuracy of the data extraction and quality assessment of all the included studies. Data were abstracted using a data extraction sheet developed specifically for this review. The variables extracted were: country of origin, healthcare setting, methodology and design of study, data collection tools, participants and sample size, aim of study, influencing factors, and type of results (Table 1). The Mixed Methods Appraisal Tool (MMAT) version 2018

(15) was used to assess the methodological quality of the studies. MMAT is a validated tool for appraising primary qualitative, quantitative and mixed-methods studies for systematic reviews. Although MMAT did not propose a scoring system, we categorized reviews as “good” when 6 or 7 of the criteria were achieved, “moderate” when 3–5 of the criteria were achieved, or “poor” when 0–2 of the criteria were achieved.

Data synthesis

Narrative synthesis was used to synthesize the findings from multiple studies in the review, using words and text to summarize and explain the key findings (16). This approach was chosen due to the heterogeneity of study designs, study populations, types of factors, and study contexts. Study characteristics were extracted to describe the main features of each study (Table 1). The data extracted were compiled and key themes were subsequently identified and categorized.

Ethical approval

Ethical approval was not required.

Results

Study selection

The study selection process is summarized in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram (Figure 1). The searches yielded 1813 references. After removing duplicates, there were 1201 unique articles, and 1172 were then excluded after screening by title and abstract. Of the remaining 29 full-text articles retrieved, 19 eligible articles were identified. The main reasons for exclusion included: studies did not mention SDM; focus on the purpose of the written informed consent; patients' views were on a specific decision, such as decision-making for antenatal screening, and not about the shared approach; or focus on how emergency physicians decide and assess the process of using clinical decision-making.

Study characteristics

An overview of the 19 included studies is presented in Table 1. They were from Islamic Republic of Iran, Saudi Arabia, Jordan, Oman, Morocco, Egypt and Pakistan. All were in English except for one in French (17).

Study participants included clinical staff (doctors and nurses), and patients and their family members. The study settings covered public, private and teaching hospitals, of which half were from teaching hospitals. Seven studies were from oncology units. The remaining studies were from other clinical settings: rehabilitation, neurology, dentistry, rheumatology, orthopaedics, anaesthesia, urology, gynaecology, emergency medicine, general internal medicine, and general surgery.

In terms of type of results, two studies assessed the role of family in the treatment decision-making process (18,19). Seven studies reported patients' perspectives, participation, preferences, beliefs and knowledge (4,5,

Table 1 Characteristic of included studies

First author (year)	Language	Country	Healthcare setting	Methodology/design	Data collection tool	Participants/sample size	Aim	Type of result
H. Rashidian (2015)	English	Iran ^a	University hospital	Quantitative	Questionnaire	Physicians/150	Understand physician attitude to the barriers of patient decision aids	Physicians' attitudes
A. Alhaqwi (2015)	English	Saudi Arabia	Family practice centre/public	Quantitative/cross-sectional study	Questionnaire	Patients/236	Explore preferences of Saudi patients to be involved in medical decision-making and the factors influencing their preferences	Patients' preferences
R. Obeidat (2015)	English	Jordan	Cancer specialty centre, public and teaching hospital	Quantitative/cross-sectional	Semi-structured interviews	Patients/156	Assess the preferences of women with breast cancer regarding their participation in decision making	Patients' preferences
R. Obeidat (2016)	English	Jordan	Cancer centre, public and teaching hospital, private clinics	Quantitative/comparative research design	Questionnaire	Physicians/86	Assess the attitude of physicians toward information disclosure, comfort and use of different approaches in decisionmaking, and patient involvement in treatment decision making.	Physicians' attitudes
M. Al-Tannir (2017)	English	Saudi Arabia	Rehabilitation, neurology/public	Quantitative/cross-sectional	Questionnaire	16 patients/22 family members/64 nurses/36 physicians	Assess patients' experiences of engagement and nurses and physicians' perceptions of patients' engagement, and compare this perception with patients' experience	Patients' experiences, physicians' and nurses' perceptions
A. Al-Bahri (2019)	English	Oman	Oncology/teaching hospital	Quantitative/cross-sectional study	Questionnaire	Patients and their family members/ 79	Assess the role of family members in the treatment decision making process among adult Omani women with breast cancer and the influencing factors on treatment decision making	Reported role of the family
S. Kumar (2010)	English	Pakistan	Oncology/university hospital	Quantitative	Questionnaire	Patients/230	Assess the influence of patients' beliefs and knowledge about cancer on their decisions regarding its management	Patients' perceptions, beliefs and knowledge
M. Alizadeh (2013)	English	Iran	University of Medical Sciences	Qualitative/descriptive phenomenology	Focus group discussion	Clinicians/6	Explore the experiences of clinicians on patient values and patient centred decision making	Physicians' experiences
F. Asghari (2008)	English	Iran	General internal medicine, general surgery/teaching hospital	Quantitative/mixed method design	Questionnaire	Patients/299	Assess patients' preferences for participating in decision making and receiving clinical information	Patients' preferences
A. Al-Bahri (2018)	English	Oman	Oncology/teaching hospital	Quantitative/cross-sectional study	Questionnaire	Patients and their family members/185	Assess the role of family members in the treatment decision making process among adult Omani and the influencing factors on treatment decision making	Reported role of the family

Table 1 Characteristic of included studies (Concluded)

First author (year)	Language	Country	Healthcare setting	Methodology/design	Data collection tool	Participants/sample size	Aim	Type of result
H. Rashidian (2013)	English	Iran	Rheumatology and orthopaedic/private and public	qualitative	In-depth interviews	14 physicians/8 patients	Explore the viewpoints of physicians and patients on the barriers, facilitators, and the benefits of using decision aids	Viewpoints of physicians and patients
E. Mohammed (2018)	English	Egypt	University Hospital	quantitative/cross-sectional study	Questionnaire	Patients/514	Assess patients' awareness of their rights, the predictors of their knowledge score, and patients' perspective on the degree of the providers' adherence to these right	Assessment for awareness
A. Alzahrani (2016)	English	Saudi Arabia	Medical centre	Qualitative/cross-sectional ethnographic	Observation/interviews	3 dentists/32 patients	Explore the process of decision making associated with patients who underwent dental implants.	Evaluation and observation
W. Alkhatrawi (2013)	English	Saudi Arabia	Private and public hospitals	Mixed methods/exploratory study	Questionnaire/in-depth focus groups	Questionnaire (296 patients/93 physiotherapists), 10 focus groups	Explore the perceptions and preferences of patients with low back pain and physiotherapists for patient involvement in decision making and information provision.	Perceptions and preferences of patients and doctors
R. Obeidat (2018)	English	Jordan	Cancer centre, public and teaching hospital, private clinics	Quantitative	Survey	Physicians/86	Physicians' perception about barriers and facilitators to shared decision-making	Physicians' perception
M.Ebrahimi (2014)	English	Iran	Anaesthesia, urology, gynaecology, emergency/teaching hospitals	Quantitative	Questionnaire	Physicians 81	Evaluate physicians' perception about shared decision-making by validating and translating SDM questionnaire	Physicians' perception
H. Mostafaie (2014)	English	Iran	University of Medical Sciences	Quantitative	Questionnaire	Patients/200	Assess the relationship between patient age, location and their preference toward SDM	Patients' perspectives
A. Boukir (2015)	French	Morocco	National institute of oncology	Quantitative	Questionnaire	Patients/272	Assess patients' participation in treatment choice	Patients' participation
H. Saleh (2014)	English	Saudi Arabia	Public hospital	Quantitative/cross-sectional study	Questionnaire	Patients/408 Physicians/68	Assess the perspective of patients' and physicians' perspective toward SDM and compare their preference in SDM.	Patients' and physicians' perspectives

*Islamic Republic of Iran.

Table 2 Barriers and facilitators to SDM in Eastern Mediterranean Region (12–28,30)

1. Participants factors		
1.1 Physicians' factors		
1.1.1 Physicians characteristics	1.1.2 Knowledge and experiences	1.1.3 Physicians' perceptions
Age (bar & fac)	Years of experience (bar & fac)	Patient engagement is not important (bar)
Gender (bar & fac)	Differences in using SDM as usual approach (bar & fac)	There is no room for SDM in our culture (bar)
Position (bar & fac)	Comfort level with shared approach (bar & fac)	Patients are unlikely to weigh different treatment options (bar)
Language (bar)		Patient involvement decrease trust in physicians (bar)
		Expectations in health care outcomes (bar & fac)
1.2 Patients' factors		
1.2.1 Knowledge and experiences	1.2.2 Patients' perceptions	1.2.3 Patients' preferences
Clinical knowledge (bar & fac)	Consider a consent as a form of participation (bar)	Preferences for participation (bar & fac)
Level of education (bar & fac)	Perceptions about physicians' abilities in diagnosis (bar & fac)	Preferences for taking responsibility (bar & fac)
Lack of knowledge about their right for sufficient information (bar)	Perceptions about physicians' caring about patients' budget (bar & fac)	Preferences for obtaining information (bar & fac)
Unfamiliar with their rights in decision making (bar)	Providers are uncooperative or not willing to listen to patients (bar)	1.2.4 Patients' characteristics
Unfamiliar with the principles of decision making (bar)	Patients do not see themselves as decision-makers (bar)	Sex (bar & fac)
Financially depend on their family (bar)		Age (bar & fac)
		Unmarried female (bar)
		Unemployed (bar)
		Health condition (bar & fac)
1.3 Family' factors		
1.3.1 Degree of involvement	1.3.2 Families' attitudes	
Accompany patients at the consultation (fac & bar)	Families' fears of patients' reaction to diagnosis (bar)	
Over-riding the process of decision-making (bar)	Families' beliefs in their responsibility for the treatment decision (bar)	
	Delays in informing their patients about the diagnosis (bar)	
	Families usually come together to discuss the decision and finalize it (bar)	
2. Consultation factors		
2.1 Relationship between participants	2.3 Evaluating preferences	2.5 Introducing options
No effort to interact or build relationship with the patients (bar)	Considering patients' preferences (bar & fac)	Introducing options (bar & fac)
Respectful behaviour from physicians (bar & fac)		Physicians lead patients to use specific treatment (bar)
Emotional support from physicians (bar & fac)	2.4 Decision making	Patients ask for a certain treatment (bar)
Providing physical comfort for patients (fac)	Physicians select the final decision alone (bar)	
Providing an opportunity to discuss Patients' problem (bar & fac)	Decision-making takes place in the presence or absence of the patient (bar)	2.6 Providing information
Passive role in communicating with providers during the visits (bar)	Consider patients' rights to choose a treatment (fac)	Providing sufficient information for the treatment (bar & fac)
Providers and their roles are known by their patients (fac)	Disagreement on treatment proceeding (bar)	Help patients to understand all useful information (fac)
Cultural influences on the way of greeting and interaction (bar)	Patients seek a second medical opinion abroad (bar)	
Trust in providers (bar & fac)	Patients share the decision with more than 1 family member (bar)	
2.2 Engaging patients	Agreement between family members on the decision (bar)	
Degree to which physicians involve patients (bar & fac)	Patients' emotional readiness for decision-making (fac)	
Patients' satisfaction with the degree of being involved (bar & fac)	Patients want their doctor to make the decision (bar)	
Provider make patients feel they are partners (fac)	Patient want their family to make the decision (bar)	
Consider patients' conditions (fac)		
Initiating a discussion with patients about participating in decision making (fac)		
Physicians clarify the necessity of making a medical decision (fac)		

Table 2 Barriers and facilitators to SDM in Eastern Mediterranean Region (12–28,30) (Concluded)

3. Healthcare system factors	
3.1 Time constraints	3.3 Organizational characteristics
Consultation time (bar & fac) Use expert teams or trained nurses to overcome the problem of time shortage (fac) Providing decision tool at the time of patients' admission to allow adequate time to decide (fac)	Type of hospital (bar & fac) Specialists per capita (bar) Workloads (bar)
3.2 Continuity of care	3.4 Health care resources
Not recognizing the patients (bar) Providers address and refer to patient directly (fac) Staffing changes (bar)	Lack of an evaluation system for patients' and physicians' rights in decision-making (bar) Lack of training in the field of SDM (bar) Creating incentives (fac) Provide appropriate role model among medical instructors (fac) Acculturate people through public media to the use of decision tools (fac) Increase physicians' skills and awareness in assessing patients' expectations of the treatment (fac) Increase patients' knowledge to demand their rights (fac) Consider cultural influences when developing awareness tools (fac) Design decision tools that suit any level of education (fac) Improving physicians' interactive skills (fac) Presenting existing information in educational CD formats instead of handbooks (fac) Developing the consent forms to include all sufficient information (fac)

bar = barrier; fac = facilitator; SDM = shared decision-making.

17,20–23). Five studies reported physicians' perceptions, attitudes and experiences (24–28). Four studies explored experiences, perceptions and preferences of both patients and clinical staff (29–33).

In terms of the aims of the studies, two sought to determine physicians' and patients' perspectives on barriers to and facilitators of the use of patient decision aids (27, 29). Two other studies assessed the role of family members in treatment decision-making and factors that influenced that decision (18,19). The other studies reported on factors influencing physicians' and patients' preferences with regards to SDM. Only one study explored the process of decision-making by physicians and their patients during consultations (33).

Fifteen studies used a quantitative approach (mainly involving questionnaires). A qualitative approach was used in two studies (26,29) and in one thesis (33). A mixed-methods approach was used in another thesis (30).

Quality assessment

All of the included studies performed well in MMAT except for two that performed moderately (31,32). The qualitative and mixed-methods studies met all of their criteria. However, the majority most of the quantitative studies were limited by use of convenience or purposive sampling techniques or small sample size (See Supplement 2).

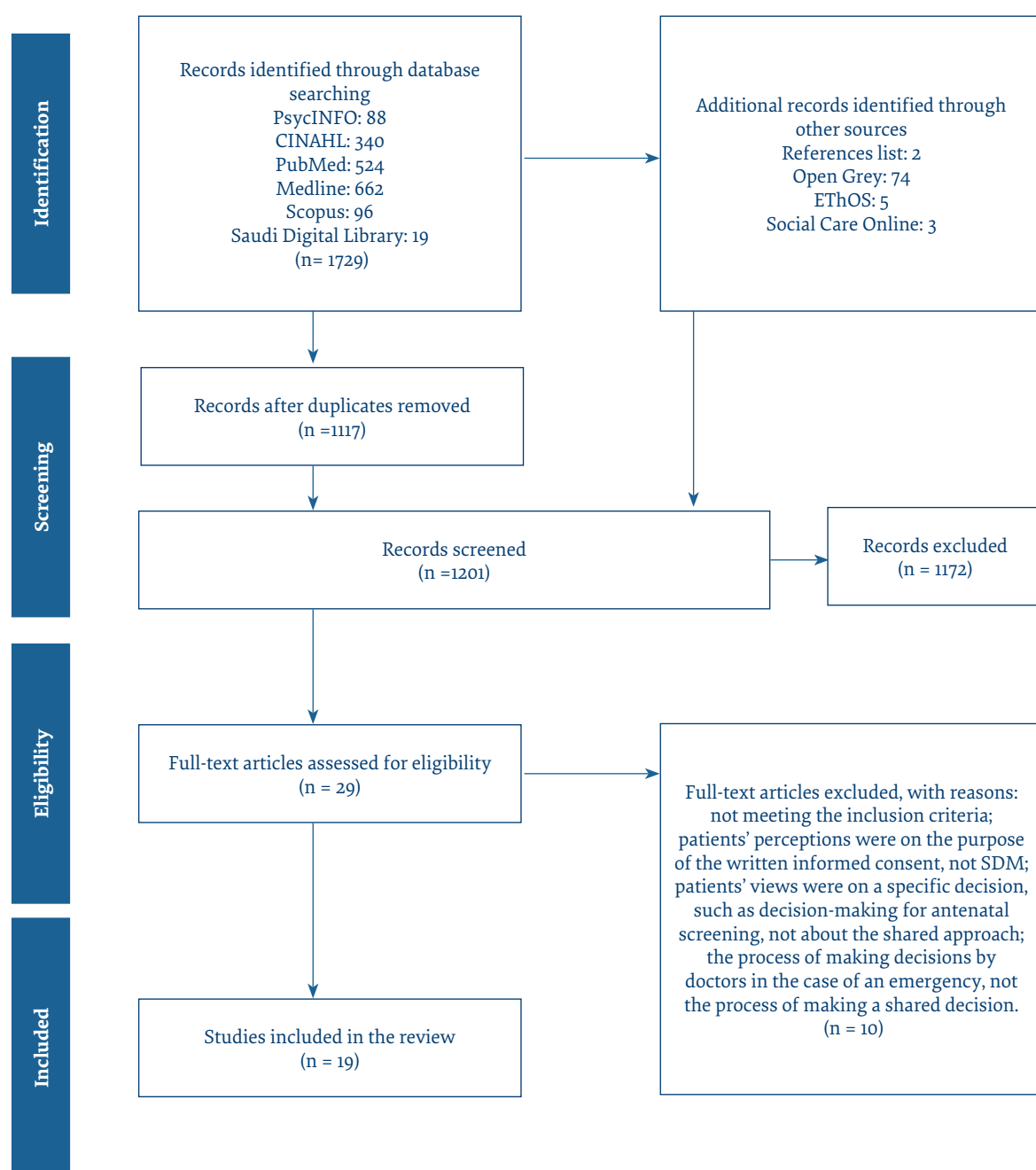
Discussion

This review identifies several influential factors for SDM in the Eastern Mediterranean Region that include physician, patient and family member perspectives. These factors span the individual participant's role in decision-making, current SDM practices during clinical con-

sultations, and SDM at the system level. However, the studies were from only seven countries. This indicates that SDM is not widely practised in countries in the Region as most developing countries have not integrated the concept of person-centred care into their health systems (34).

Unsurprisingly, patient and physician characteristics, such as their prior knowledge, experience and perceptions of SDM, and preferences towards it, are influential in determining whether it is practised. However, the practice of SDM is also affected by the attitudes of family members and the degree of their involvement in the decisions. These factors affect the interactions between the physicians and patients, as well as the consultation process including patient engagement, information provision and option sharing, elicitation and evaluation of patient preferences, and eventual decision-making. System-level factors also play a part such as time pressures, availability of healthcare resources to support SDM, and the degree of continuity of care provided. Figure 2 represents the relationship between these factors.

The most frequently cited factor was patients' level of education. Similar findings were previously reported in other studies from western countries (35,36). Patients' age was also a determinant in the Region, with a notable preference for a passive role with increasing age. Although this mirrors a study from Japan (47), this age factor is not consistent worldwide. For example, one American study found that older people wanted to share their medical decisions or make their own (37). In the Region, older patients may lack clinical knowledge and have lower levels of education overall, which may explain the tendency towards adopting passive roles in decision-making (4,18–20).

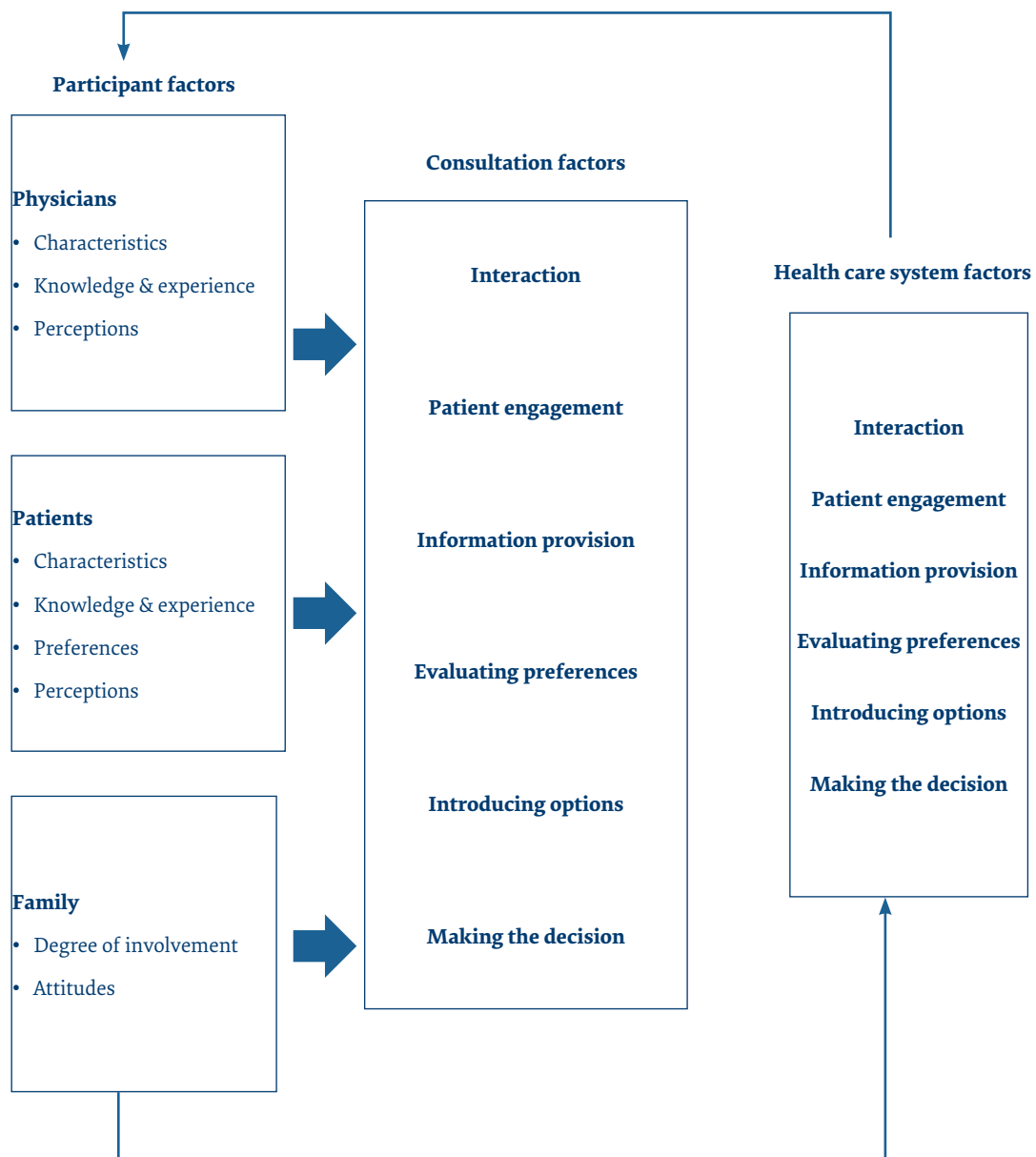
Figure 1 PRISMA diagram of barriers and facilitators to implementing shared decision-making in Eastern Mediterranean countries

This review found patient gender preferences for SDM. Al-Bahri and colleagues stated that family structures are more likely to be hierarchical in Middle Eastern culture (18). Traditionally, male family members such as husbands, fathers, and eldest sons have more authority in decision-making and therefore often dominate the decision-making process (38). This may explain the positive attitudes that male participants have towards decision-making. However, our review found that this trend was not universal and further exploration of the role of gender in decision-making is warranted,

particularly as gender norms in the Region continue to evolve.

The quality of the physician–patient relationship is clearly vital and the behaviour of physicians is a key facilitator of patient trust (39). Linked to this is the adequacy of information provision as an enabler for SDM (40). Patient trust was boosted when physicians provided patients with a significant amount of information about their condition, test results, and adverse effects of different treatment options (39). However, patients' preferences for the amount of information provided

Figure 2 Relationship between the main themes



differs among patients, and physicians need to tailor what information is exchanged with their patients. Key considerations include: the amount of prior knowledge that the patient has; how much information is considered to be sufficient; and who should decide if this information is enough for decision-making (41). An assessment of the level of patient understanding of the information provided is needed as there are variations in patients' health literacy.

Family involvement can facilitate patient participation in SDM and enhance this process. Family involvement can increase the probability for patients to experience positive emotions, and decrease the likelihood of them experiencing stress and uncertainty when making decisions about their condition (42). There are commonalities in the culture in the Region which has a

collective nature and is family-centred. The families feel a moral responsibility for their members who are patients, and believe that they should be involved in the decision-making process (43,44). That said, this is not unique to the Region and has been reported in other cultures where family involvement in the decision-making process enhances patients' engagement and autonomy (45). However, family involvement can also be a barrier to patient participation when the family dominates the decision-making process. Family involvement may disrupt communication between patients and physicians, and may delay treatment decisions where there are conflicting views (46). This raises the question of how best to include family members in the decision-making process.

A key limitation of this review is the diversity of the countries included in the Region, ranging from high-income countries like Saudi Arabia to more resource-constrained settings such as Pakistan. There are significant resource, socioeconomic and health system differences, as well as variations in demographic profiles. Moreover, the studies included did not cover all countries in the Region, and there were not many studies on SDM in the Region. Consequently, the aggregated findings in this review may not be truly representative or readily generalized to all countries in the Region. This highlights a need for further country-specific research into local SDM practices and determinants.

The implementation of SDM in any setting is subject to a complex landscape of interacting barriers. These need to be identified and addressed to ensure effective

implementation, and can be enhanced through utilizing known facilitators. Much of the focus previously has been on physician factors, but as this review shows, there is a need to also address patient factors, family involvement, as well as wider health system issues. The development of simple patient decision aids that could be understood by patients with low literacy levels could be efficacious. Encouraging clinicians to provide patients with more tailored information is also key, but this will require resourcing such as the provision of more consultation time. We need more research that considers cultural norms and the organizational and health system perspective, as well as SDM research in other countries in the Region where little has been done so far. Future research into these aspects is warranted.

Acknowledgement

We thank all of those who contributed to this work. NA, the corresponding author, and TA would like to thank the Saudi Culture Bureau for sponsoring this project.

Funding: None.

Competing interests: None declared.

Opinions des parties prenantes sur les facteurs influençant la prise de décision partagée dans la Région de la Méditerranée orientale : analyse systématique

Résumé

Contexte : La prise de décision partagée est préconisée en tant que composante clé des soins centrés sur le patient et associée à de nombreux avantages qui améliorent les résultats pour ces derniers. Toutefois, ce mode de prise de décision n'est pas encore intégré dans la pratique clinique et se heurte à de nombreux obstacles qui entravent sa mise en œuvre, en particulier dans les pays de la Région de l'Organisation mondiale de la Santé (OMS) pour la Méditerranée orientale.

Objectifs : Réaliser une analyse systématique afin d'identifier et de comprendre les facteurs influençant la prise de décision partagée dans la Région.

Méthodes : Nous avons cherché des articles publiés de janvier 1997 à février 2019 dans PsycINFO, CINAHL, PubMed, Medline, Scopus et la bibliothèque numérique saoudienne. Les études menées dans la Région qui faisaient état des obstacles, des éléments favorisant, des expériences, des attentes et des attitudes vis-à-vis de la prise de décision partagée ont été incluses. L'outil d'évaluation des méthodes mixtes (MMAT) a été utilisé pour évaluer la qualité méthodologique des études de cette analyse.

Résultats : Sur les 1813 articles initiaux récupérés, 19 articles éligibles ont été identifiés. Les principaux facteurs qui ont émergé ont été regroupés en trois grands thèmes : les facteurs associés aux participants (patients/familles et médecins) ; les facteurs de consultation (relation entre les participants, engagement des patients, évaluation des préférences, introduction des options, fourniture d'informations et prise de décision) ; et les facteurs liés au système de santé (caractéristiques organisationnelles, contraintes temporelles, continuité des soins et ressources sanitaires).

Conclusions : Plusieurs pays de la Région s'intéressent de plus en plus à la prise de décision partagée. Cependant, il existe de nombreux obstacles qui entravent la mise en œuvre de ce mode de prise de décision. Il faut s'attaquer à ces problèmes avant que la prise de décision partagée puisse être pleinement adoptée dans ces pays.

آراء أصحاب المصلحة المعنيين بشأن العوامل المؤثرة على عملية اتخاذ القرار المشترك في إقليم شرق المتوسط: استعراض منهجي

نوف السلمي، أندرو لي، برافين ثوكالا، تركيه العيسى

الخلاصة:

الخلفية: يُشار إلى عملية اتخاذ القرار المشترك بوصفها أحد المكونات الرئيسية للرعاية التي تركز على المرضى، كما أنها مرتبطة بالعديد من المنافع التي من شأنها تحسين المخرجات الخاصة بالمرضى. إلا أن عملية اتخاذ القرار المشترك لم تُدمج بعد في الممارسات السريرية، وتواجه العديد من العقبات التي تحول دون تنفيذها، لا سيما في بلدان إقليم منظمة الصحة العالمية لشرق المتوسط.

الأهداف: هدفت هذه الدراسة إلى استعراض منهجي لتحديد العوامل المؤثرة على عملية اتخاذ القرار المشترك في الإقليم وفهمها.

طرق البحث: لقد نظرنا في (PsycINFO) و (CINAHL) و (PubMed) و (Medline) و (Scopus) والمكتبة الرقمية السعودية بحثاً عن المقالات التي نُشرت في الفترة بين عام يناير / كانون الثاني 1997 وفبراير / شباط 2019. كما أدرجت الدراسات التي أجريت في الإقليم وأفادت بوجود عقبات أمام عملية اتخاذ القرار المشترك وعوامل مُيسرة وتجارب وتوقعات ومواقف مرتبطة بها. واستُخدمت أداة تقييم طرق البحث المختلطة (MMAT) لتقييم الجودة المنهجية للدراسات المتضمنة في هذا الاستعراض.

النتائج: من بين 1813 مقالاً مبدئياً من المقالات التي حُصل عليها، حُدد 19 مقالاً صالحاً للاستخدام. وقُسمت العوامل الرئيسية التي ظهرت إلى 3 موضوعات عامة، ألا وهي: العوامل الخاصة بالمشاركين (المرضى / الأسر والأطباء)؛ والعوامل الخاصة بالتشاور (العلاقة بين المشاركين، اشراك المرضى وتقييم التفضيلات، وتقديم الخيارات، وتقديم المعلومات، واتخاذ القرارات)؛ والعوامل الخاصة بنظام الرعاية الصحية (الخصائص التنظيمية، والقيود الزمنية، واستمرارية الرعاية، وموارد الرعاية الصحية).

الاستنتاجات: هناك اهتمام متزايد بعملية اتخاذ القرار المشترك في عدة بلدان في الإقليم. ولكن، لا يزال هناك العديد من العقبات القائمة التي تحول دون تنفيذ عملية اتخاذ القرار المشترك. وينبغي التصدي لهذه العقبات قبل اعتماد عملية اتخاذ القرار المشترك اعتماداً تاماً في هذه البلدان.

References

1. Elwyn G, Laitner S, Coulter A, Walker E, Watson P, Thomson R. Implementing shared decision making in the NHS. *BMJ*. 2010 Oct 14;341:c5146. <http://dx.doi.org/10.1136/bmj.c5146> PMID: 2094757
2. NHS Constitution – interactive version [website]. 2009 (https://www.nhs.uk/NHSEngland/aboutnhs/Documents/NHS_Constitution_interactive_9Mar09.pdf, accessed 22 September 2020).
3. Adam J, Khaw F-M, Thomson R, Gregg P, Llewellyn-Thomas H. Patient decision aids in joint replacement surgery: A literature review and an opinion survey of consultant orthopaedic surgeons. *Ann R Coll Surg Engl*. 2008 Apr;90(3):198–207. <http://dx.doi.org/10.1308/003588408X285748> PMID:18430333
4. AlHaqwi AI, AlDrees TM, AlRumayyan A, AlFarhan AI, Alotaibi SS, AlKhashan HI, et al. Shared clinical decision making. A Saudi Arabian perspective. *Saudi Med J*. 2015 Dec;36(12):1472–6. <http://dx.doi.org/10.15537/smj.2015.12.13682> PMID:26620990
5. Asghari F, Mirzazadeh A, Fotouhi A. Patients' preferences for receiving clinical information and participating in decision-making in Iran. *J Med Ethics*. 2008 May 1;34(5):348–52. <http://dx.doi.org/10.1136/jme.2007.021873> PMID:18448714
6. Harter M, Moumjid N, Cornuz J, Elwyn G, van der Weijden T. Shared decision making in 2017: International accomplishments in policy, research and implementation. *Z Evid Fortbild Qual Gesundheitswes*. 2017 Jun;123–4. <http://dx.doi.org/10.1016/j.zefq.2017.05.024> PMID:28546053
7. Summit report: leading the way to shared decision making. The critical steps for the NHS Commissioning Board to make 'no decision about me, without me' a reality. The Health Foundation; 2012 (<https://www.health.org.uk/publications/leading-the-way-to-shared-decision-making>, accessed 22 September 2020).
8. Légaré F, Ratté S, Gravel K, Graham ID. Barriers and facilitators to implementing shared decision-making in clinical practice: update of a systematic review of health professionals' perceptions. *Patient Educ Couns*. 2008 Dec;73(3):526–35. <http://dx.doi.org/10.1016/j.pec.2008.07.018> PMID:18752915
9. Joseph-Williams N, Elwyn G, Edwards A. Knowledge is not power for patients: a systematic review and thematic synthesis of patient-reported barriers and facilitators to shared decision making. *Patient Educ Couns*. 2013 Mar;94(3):291–309. <http://dx.doi.org/10.1016/j.pec.2013.10.031> PMID:24305642
10. Robertson EG, Wakefield CE, Signorelli C, Cohn RJ, Patenaude A, Foster C, et al. Strategies to facilitate shared decision-making about pediatric oncology clinical trial enrollment: a systematic review. *Patient Educ Couns*. 2018 Jul;101(7):1157–74. <http://dx.doi.org/10.1016/j.pec.2018.02.001> PMID:29455939
11. Scholl I, LaRussa A, Hahlweg P, Kobrin S, Elwyn G. Organizational- and system-level characteristics that influence implementation of shared decision-making and strategies to address them – a scoping review. *Implement Sci*. 2018 Mar 9;13(1):40. <http://dx.doi.org/10.1186/s13012-018-0731-z> PMID:29523167

12. About WHO. Regional Office for the Eastern Mediterranean [website]. Cairo: World Health Organization (<https://www.who.int/about/regions/emro/en/>, accessed 22 September 2020).
13. Health systems in the Eastern Mediterranean Region: situation, challenges and gaps, priorities and WHO contribution. Cairo: World Health Organization Regional Office for the Eastern Mediterranean Region; 2012 (https://apps.who.int/iris/bitstream/handle/10665/116086/High_Level_Exp_Meet_Rep_2012_EN_14496.pdf?sequence=1, accessed 22 September 2020).
14. Report on primary health care in the Eastern Mediterranean Region: review of progress over the last decade (2008–2018). Cairo: World Health Organization Regional Office for the Eastern Mediterranean Region; 2018 (https://www.who.int/docs/default-source/primary-health-care-conference/phc-regional-report-eastern-mediterranean.pdf?sfvrsn=2a5a2528_2, accessed 22 September 2020).
15. Hong QN, Pluye P, Fàbregues S, Bartlett G, Boardman F, Cargo M, et al. Mixed methods appraisal tool (MMAT), version 2018. User guide. [website] Montreal: Department of Family Medicine, McGill University; 2018 (http://mixedmethodsappraisaltool-public.pbworks.com/w/file/fetch/127425851/MMAT_2018_criteria-manual_2018-04-04.pdf, accessed 22 September 2020).
16. Popay J, Roberts H, Sowden A, Petticrew M, Arai L, Rodgers M, et al. Guidance on the conduct of narrative synthesis in systematic reviews: a product from the ESRC Methods Programme. 2006 (<https://www.lancaster.ac.uk/media/lancaster-university/content-assets/documents/fhm/dhr/chir/NSsynthesisguidanceVersion1-April2006.pdf>, accessed 22 September 2020).
17. Boukir A, Azghari I, El Kabous M, Jouid K, Boutayeb S, El Ghissassi I, et al. Moroccan patient participation with cancer to therapeutic choice: results of a survey of 272 patients. *Pan Afr Med J*. 2015 Oct 22;22:174 (in French). <http://dx.doi.org/10.11604/pamj.2015.22.174.7040> PMID:26918070
18. Al-Bahri A, Al-Moundhri M, Al-Mandhari Z, Al-Azri M. The role of patients' families in treatment decision-making among adult cancer patients in the Sultanate of Oman. *Eur J Cancer Care (Engl)*. 2018 May;27(3):e12845. <http://dx.doi.org/10.1111/ecc.12845>. PMID:29667246
19. Al-Bahri A, Al-Moundhri M, Al-Mandhari Z, Al-Azri M. Role of the family in treatment decision-making process for Omani women diagnosed with breast cancer. *Patient Educ Couns*. 2019 Feb;102(2):352–9. <http://dx.doi.org/10.1016/j.pec.2018.08.026> PMID:30170824
20. Obeidat R. Decision-making preferences of Jordanian women diagnosed with breast cancer. *Support Care Cancer*. 2015 Aug;23(8):2281–5. <http://dx.doi.org/10.1007/s00520-014-2594-4> PMID:25576431
21. Kumar S, Shaikh AJ, Khalid S, Masood N. Influence of patient's perceptions, beliefs and knowledge about cancer on treatment decision making in Pakistan. *Asian Pac J Cancer Prev*. 2010;11(1):251–5. PMID:20593966
22. Mohammed E, Seedhom A, Ghazawy E. Awareness and practice of patient rights from a patient perspective: an insight from Upper Egypt. *Int J Qual Heal Care*. 2018 Mar;30(2):145–51. <https://doi.org/10.1093/intqhc/mzx182>
23. Mostafaie H. Shared decision-making and its correlation with demographic characteristics of Iranian patients. *Br J Med Med Res*. 2014;4(16):3140–7. <https://doi.org/10.9734/BJMMR/2014/8841>
24. Ebrahimi M. Physicians' perspectives toward shared decision making in developing countries. *Br J Med Med Res*. 2014;4(18):3458–64. <https://doi.org/10.9734/BJMMR/2014/8839>
25. Obeidat RF, Lally RM. Jordanian physicians' perceived barriers and facilitators to patient participation in treatment decision-making: an exploratory study. *Indian J Cancer*. 2018 Oct–Dec;55(4):514–8. http://dx.doi.org/10.4103/ijc.IJC_122_18 PMID:30829274
26. Alizadeh M, Tabrizi J, Kia N, Khanlarzadeh E, Khamnian Z. A qualitative study on the experiences of specialists on patient-oriented decision making in a developing country. *Res Dev Med Educ*. 2013 Jun;2(2):83–6. <http://dx.doi.org/10.5681/rdme.2013.019>
27. Rashidian H, Nedjat S, Mounesan L, Haghjou L, Majdzadeh R. The attitude of physicians toward the use of patient decision aids in Iran as a developing country. *Int J Prev Med*. 2015 Feb 20;6:18. <http://dx.doi.org/10.4103/2008-7802.151827> PMID:25789150
28. Obeidat R, Khrais HI. Jordanian physicians' attitudes toward disclosure of cancer information and patient participation in treatment decision-making. *Asia-Pacific J Oncol Nurs [Internet]*. 2016 Jul–Sep;3(3):281–8. <http://dx.doi.org/10.4103/2347-5625.189811> PMID:27981172
29. Rashidian H, Nedjat S, Majdzadeh R, Gholami J, Haghjou L, Abdollahi BS, et al. The perspectives of Iranian physicians and patients towards patient decision aids: a qualitative study. *BMC Res Notes*. 2013 Sep 25;6:379. <http://dx.doi.org/10.1186/1756-0500-6-379> PMID:24066792
30. AlKhatrawi W. An exploratory study of patients' and physiotherapists' perceptions and preferences when making decisions and sharing information about managing low back pain in Saudi Arabia [thesis]. King's College London; 2013.
31. Al-Tannir M, AlGahtani F, Abu-Shaheen A, Al-Tannir S, AlFayyad I. Patient experiences of engagement with care plans and healthcare professionals' perceptions of that engagement. *BMC Health Serv Res*. 2017 Dec;17(1):853. <https://doi.org/10.1186/s12913-017-2806-y>
32. Saleh HA, Ramadan R, Ghazzawi G, Kalantan N, Mounshi B, Fatani K, et al. Patient Shared Decision Making: Physicians' and Patients' Perspective. *Int J Pure Appl Sci Technol*. 2014 Jun;22(2):10–7.
33. Alzahrani AAH. Decision making and dental implant treatments in Saudi Arabia [thesis]. University of Sheffield; 2016.
34. Qidwai W, Nanji K, Khoja T, Rawaf S, Al Kurashi NY, Alnasir F, et al. Are we ready for a person-centered care model for patient-physician consultation? A survey from family physicians of East Mediterranean Region. *Eur J Pers Centered Healthc*. 2016;1(2):394. https://ecommons.aku.edu/pakistan_fhs_mc_fam_med/48

35. Adams RJ, Smith BJ, Ruffin RE. Patient preferences for autonomy in decision making in asthma management. *Thorax*. 2001 Feb;56(2):126–32. <http://dx.doi.org/10.1136/thorax.56.2.126> PMID:11209101
36. Mazur DJ, Hickam DH. Patients' preferences for risk disclosure and role in decision making for invasive medical procedures. *J Gen Intern Med*. 1997 Feb;12(2):114–7. <http://dx.doi.org/10.1046/j.1525-1497.1997.00016.x> PMID:9051561
37. Chiu C, Feuz MA, McMahan RD, Miao Y, Sudore RL. “Doctor, make my decisions”: Decision control preferences, advance care planning, and satisfaction with communication among diverse older adults. *J Pain Symptom Manage*. 2016;51(1):33–40. <http://dx.doi.org/10.1016/j.jpainsymman.2015.07.018> PMID:26342727
38. Valentine M. Patriarchy in transition: women and the changing family in the Middle East. *J Comp Fam Stud*. 2004;35(2):137–63. <https://psycnet.apa.org/record/2004-11038-001>
39. Peek ME, Gorawara-bhat R, Quinn MT, Odoms-young A, Chin MH. Patient trust in physicians and shared decision-making among African-Americans with diabetes. *Health Commun*. 2013;28(6):616–23. <http://dx.doi.org/10.1080/10410236.2012.710873> PMID:23050731
40. Dy SM, Purnell TS. Key concepts relevant to quality of complex and shared decision-making in health care: a literature review. *Soc Sci Med*. 2012 Feb;74(4):582–7. <http://dx.doi.org/10.1016/j.socscimed.2011.11.015> PMID:22236643
41. Feldman-Stewart D, Madarnas Y, Mates M, Tong C, Grunfeld E, Verma S, et al. Information for decision making by post-menopausal women with hormone receptor positive early-stage breast cancer considering adjuvant endocrine therapy. *Breast*. 2013 Oct;22(5):919–25. <http://dx.doi.org/10.1016/j.breast.2013.04.020> PMID:23721853
42. Kitayama S, Park H, Sevincer AT, Karasawa M, Uskul AK. A cultural task analysis of implicit independence: comparing North America, Western Europe, and East Asia. *J Pers Soc Psychol*. 2009 Aug;97(2):236–55. <http://dx.doi.org/10.1037/a0015999> PMID:19634973
43. Shin DW, Cho J, Roter DL, Kim SY, Sohn SK, Yoon MS, et al. Preferences for and experiences of family involvement in cancer treatment decision-making: patient-caregiver dyads study. *Psychooncology*. 2013 Nov;22(11):2624–31. <http://dx.doi.org/10.1002/pon.3339> PMID:23893390
44. Bian L. Medical individualism or medical familism? A critical analysis of China's new guidelines for informed consent: the basic norms of the documentation of the medical record. *J Med Philos*. 2015 Aug;40(4):371–86. <http://dx.doi.org/10.1093/jmp/jhv016> PMID:26070661
45. Laidsaar-Powell R, Butow P, Bu S, Charles C, Gafni A, Fisher G. Family involvement in cancer treatment decision-making: a qualitative study of patient, family, and clinician attitudes and experiences. *Patient Educ Couns*. 2016 Jul;99(7):1146–55. <http://dx.doi.org/10.1016/j.pec.2016.01.014> PMID:26873544
46. Burney IA. The trend to seek a second opinion abroad amongst cancer patients in Oman: challenges and opportunities. *Sultan Qaboos Univ Med J*. 2009 Dec;9(3):260–3. PMID:21509308
47. Nomura K, Ohno M, Fujinuma Y, Ishikawa H. Patient autonomy preferences among hypertensive outpatients in a primary care setting in Japan. *Intern Med*. 2007;46(17):1403–8. <http://dx.doi.org/10.2169/internalmedicine.46.0141> PMID:17827839

Mass immunization and COVID-19: the need for continued primary health care

Rahim Badrfam¹ and Atefeh Zandifar²

¹Department of Psychiatry, Roozbeh Hospital, School of Medicine, Tehran University of Medical Sciences, Tehran, Islamic Republic of Iran. ²Social Determinants of Health Research Center, Alborz University of Medical Sciences, Karaj, Islamic Republic of Iran (Correspondence to: Atefeh Zandifar: zandifaratefe@gmail.com).

Citation: Badrfam R; Zandifar A. Mass immunization and COVID-19: the need for continued primary health care. *East Mediterr Health J.* 2021;27(3):312-313. <https://doi.org/10.26719/2021.27.3.312>

Received: 04/12/20; accepted: 04/03/21

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Sir,

Given the continuing global health emergency conditions due to COVID-19 and the need to pay attention to all public health matters, the WHO Director General stressed the Organization's efforts to continue providing services in various areas of primary health care, including vaccination (1). According to the UNICEF Regional Director for the Middle East and North Africa, while the fight against COVID-19 continues the vaccination programme for children has been problematic in some countries for a variety of reasons. Thus, in the recent past, one in five children (about 10 million people) under the age of five and about 4.5 million children under the age of 15 have not received polio and measles vaccinations, respectively (2). In addition, with the global spread of COVID-19 leading to the disruption of routine vaccination efforts, 80 million children under the age of one are at risk from diseases such as diphtheria, measles and polio (3). Recent reports of new polio outbreaks in some areas and their consequences have added to such concerns (4).

Global and regional attention to COVID-19 has meant the desire of health workers to implement routine vaccination programmes during this period, have been problematic. Limited health human resources, especially in low and middle-income countries due to their involvement with COVID-19, is one of the factors reducing immunization coverage in these countries (5). Despite UNICEF's efforts, it appears that restrictions on the transportation of vaccines to these countries, including restrictions on movement and items related to border crossings and airspace, are among the factors that could have contributed to this delay. Other contributing factors are the closure of schools in many parts of the world and the decline in vaccination coverage normally associated with routine deliveries in schools (6). Moreover, logistical obstacles (7) and the constraints created in relation to financial resources (8) have aggravated this situation. On top of this, many parents also express fear of being exposed to COVID-19 when their children want to be vaccinated (9).

In the context of the implementation of primary health care programmes for vaccination coverage in the

Eastern Mediterranean Region, it was decided in 1997 to attempt to eradicate measles by 2010. In 1981, the incidence of measles in the Region was 193 per 100 000, and by 2001 it was 6.8 per 100 000 (10). Although specific programmes and solutions were proposed to achieve this goal (such as efforts to cover over 95% of the first stage of the measles vaccine), this was not achieved by 2010 and was re-planned for 2015. Meanwhile, several major outbreaks occurred with a high incidence of the disease due to civil war and population displacement in countries such as Djibouti, Iraq, Somalia and South Sudan (11–14).

Vaccination coverage in these areas rose to 82% for the first dose of measles-containing vaccine (MCV1) in 2018 (compared to 79% in 2013), and MCV2 coverage rose from 59% in 2013 to 74% in 2018. The incidence of measles has also dropped from 33.5 per million in 2013 to 23.3 per million in 2019. Despite this relative improvement, other major outbreaks of measles have occurred during this period. For example, in 2018, the incidence of measles increased to 91.2 per million people (15).

What is emerging today in the wake of vaccination problems in the Eastern Mediterranean Region is the concern that a new wave of measles outbreaks could occur, which could unfortunately be due to declining MCV1 and MCV2 vaccination coverage. Inevitably, important parts of recent primary health care activity, even in countries with a good track record in terms of primary health care (16), have shifted to COVID-19. Added to this, internal and international conflicts in the Region have meant that the lack of primary health care in areas such as mass immunization following the COVID-19 pandemic has raised serious concerns about the outbreak of controlled diseases.

In summary, it is important to inform populations about the need to conscientiously complete the vaccination process in the context of the COVID-19 pandemic. In addition, the needs of governments in the Region must be met in order to facilitate access to required vaccines for this goal. Finally, the effective provision of health service staff, and assistance from international health organizations in this regard, would be necessary and welcome.

References

1. World Health Organization. WHO director-general's opening remarks at the media briefing on COVID-19. Geneva: World Health Organization; 1 May, 2020. (<https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19--1-may-2020>).
2. UNICEF. Despite Covid-19 pandemic, routine vaccination of children continues across the Middle East and North Africa. New York: UNICEF; 3 May 2020. (<https://www.unicef.org/mena/press-releases/despite-covid-19-routine-vaccination-children-continues-middle-east-north-africa>).
3. World Health Organization. At least 80 million children under one at risk of diseases such as diphtheria, measles and polio as COVID-19 disrupts routine vaccination efforts, warn Gavi, WHO and UNICEF. Geneva: World Health Organization; 22 May, 2020. (<https://www.who.int/news-room/detail/22-05-2020-at-least-80-million-children-under-one-at-risk-of-diseases-such-as-diphtheria-measles-and-polio-as-covid-19-disrupts-routine-vaccination-efforts-warn-gavi-who-and-unicef>).
4. UNICEF. Joint press statement: polio programme accelerates efforts to respond to new polio outbreaks in Sudan and Yemen. New York: UNICEF; 11 September, 2020. (<https://www.unicef.org/mena/press-releases/joint-press-statement-polio-programme-accelerates-efforts-respond-new-polio>).
5. Chandir S, Siddiqi DA, Mehmood M, Setayesh H, Siddique M, Mirza A, et al. Impact of COVID-19 pandemic response on uptake of routine immunizations in Sindh, Pakistan: an analysis of provincial electronic immunization registry data. *Vaccine*. 2020;38(45):7146-55.
6. McDonald HI, Tessier E, White JM, Woodruff M, Knowles C, Bates C, et al. Early impact of the coronavirus disease (COVID-19) pandemic and physical distancing measures on routine childhood vaccinations in England, January to April 2020. *Eurosurveillance*. 2020;25(19):2000848.
7. Abbas K, Procter SR, van Zandvoort K, Clark A, Funk S, Mengistu T, et al. Routine childhood immunisation during the COVID-19 pandemic in Africa: a benefit–risk analysis of health benefits versus excess risk of SARS-CoV-2 infection. *Lancet Glob Health*. 2020;8(10):e1264-e72.
8. Badrfam R, Zandifar A. Fighting COVID-19; Governments or the Masses? *J Iran Med Council*. 2021;3(4):211-213.
9. Saxena S, Skirrow H, Bedford H. Routine vaccination during covid-19 pandemic response. *BMJ*. 2020;369:m2392
10. Gaafar T, Moshni E, Lievano F. The challenge of achieving measles elimination in the Eastern Mediterranean Region by 2010. *J Infect Dis*. 2003;187(Supplement_1):S164-S71.
11. Teleb N, Lebo E, Ahmed H, Hossam AR, El Sayed ET, Dabbagh A, et al. Progress toward measles elimination—eastern mediterranean region, 2008–2012. *Morb Mortal Wkly Rep*. 2014;63(23):511.
12. Guha-Sapir D, Ratnayake R. Consequences of ongoing civil conflict in Somalia: evidence for public health responses. *PLoS Med*. 2009;6(8):e1000108.
13. Gambino C, Trevelyan EN, Fitzwater JT. Foreign-born population from Africa, 2008-2012: Washington, DC: US Department of Commerce, Economic and Statistics Administration; 2014.
14. Chatelard G. The politics of population movements in contemporary Iraq: A research agenda. *Writing the Modern History of Iraq: Historiographical and Political Challenges*: World Scientific. 2012:359-78. https://doi.org/10.1142/9789814390576_0022
15. Goodson JL. Progress Toward Measles Elimination—Eastern Mediterranean Region, 2013–2019. *Morb Mortal Wkly Rep*. 2020;69.
16. Badrfam R, Zandifar A. Coronavirus disease 2019 in Iran: the need for more attention to primary health care. *Public Health*. 2020;182:187.

Developing national institutional capacity for evidence-informed policy-making for health

Citation: Developing national institutional capacity for evidence-informed policy-making for health. East Mediterr Health J. 2021;27(3):314–315 <https://doi.org/10.26719/2021.27.3.314>

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (<https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Introduction

As highlighted in Regional Committee technical paper EM/RC66/6 (1), health policies need to be based on sound evidence to ensure that they are appropriate, effective and cost-effective. Evidence-informed policy-making is therefore essential to achieve the Sustainable Development Goals and universal health coverage, and its importance is emphasized repeatedly in WHO's current global strategy, the Thirteenth General Programme of Work 2019–2023 (GPW 13) (2).

Over the years, WHO has taken important steps to strengthen evidence-informed policy-making in the countries of the Region. In a landmark resolution (EM/RC66/R.5) in 2019, a framework for “improving national institutional capacity for use of evidence in health policy making in the Eastern Mediterranean Region” (3) was endorsed and as a key request, EM/RC66/R.5 envisaged the development of an action plan for the implementation of the framework. In addition, Regional Office (WHO/EMRO) mandates to establish the regional network of institutions to enhance the use of evidence for policy development at national levels. The regional action plan intends to support the Member States to develop national mechanism to support and enhance evidence-informed policy-making and the network will play an important role in strengthening regional and country capacity to improve the availability, quality and use of evidence for decision-making and institutionalizing the use of evidence at national level.

The virtual Intercountry Consultative Meeting was held by WHO/EMRO on 16 November 2020 (4).

The objectives of the meeting were to:

- discuss the draft regional action plan for the implementation of the framework for action to improve national institutional capacity for the use of evidence in health policy-making in the Eastern Mediterranean Region (2020–2024);
- seek the support of the countries in the Region to finalize the formal arrangements for establishing the Regional Network of Institutions for Evidence and Data to Policy (NEDtP).

The meeting was attended by senior policy-makers from ministries of health, managers and key researchers from national institutions, supporting institutions for NEDtP, including the Alliance for Health Policy and System Research, McMaster University and regional and global well-known institutions, as well as directors and senior

WHO staff from the Regional Office for the Eastern Mediterranean Region, Cairo, Egypt, and WHO headquarters, Geneva, Switzerland.

Summary of discussions

The morning session began with the topic of the regional action plan. First, a brief presentation on rationale and components of the action plan were presented, and then the recommendations of countries were discussed. In the evening session, first presentations were made by directors and senior WHO staff about the role of these initiatives in their programmes and then the issue of establishing NEDtP were discussed, stating its mission and objectives as well as the role of the Regional Office and the Member Institutions.

It was discussed that now is a strategic time in the region to establish national mechanisms in which systematic and regular use of evidence for policy making for health is followed and for this WHO/EMRO and its country offices should enhance their technical capacity, keep it updated to support and become the ambassadors for the use of evidence in health policy-making. It was emphasized the countries should also take into account internal programmes and technical streams to promote a systematic unified approach of evidence-informed policy-making at the national levels.

Recommendations

To WHO

- Enhancing WHO/EMRO capacity and output in support of evidence-informed policy-making in Eastern Mediterranean Region countries through supporting;
 - development and adaptation of evidence based guidelines for high priority topics;
 - evidence-informed policy-making processes and development of policy briefs and implementation guides;
 - rapid response processes in adaptation or development of evidence-informed policy recommendations in emergency settings;
- supporting countries in improving national institutional capacity for evidence-informed policy-making through;
 - providing technical support to countries to strengthen national institutional capacity development;
 - strengthening communication tools and advocacy to enhance evidence-informed policy-making;

- establishing a Regional Network and Support Structure through establishing:
 - a Regional Network of Institutions for Evidence and Data to Policy (NEDtP);
 - a NEDtP secretariat.
- To Member States**
- Enhancing demand and advocacy for evidence-informed-policy making;
 - enhancing decision making structures and processes for use of evidence through:
 - enhancing technical capacity of Ministry of Health staff in critical appraisal of knowledge products and evidence synthesis reports'
 - establishing dedicated evidence to policy team(s) within the Ministry of Health including all key expertise areas;
 - enhancing national policy-making committees decision making processes;
 - establishing special programs (such as national Health Technology Assessment and guideline adaptation/development programmes) for evidence-informed decision making;
 - establishing mechanisms to regulate and manage conflicts of interests and enhance transparency in policy-making;
 - establishing support structures and affiliations.
 - enhancing resources for evidence-informed policy-making through:
 - enhancing access to sources of knowledge and research evidence for health;
 - foreseeing adequate and sustainable financing to support evidence-informed policy-making;
 - enhancing national academic capacity for evidence-informed policy-making.

References

1. WHO Regional Committee for the Eastern Mediterranean resolution EM/RC66/ R.5 on developing national institutional capacity for evidence-informed policy-making for health, Cairo: WHO Regional Office for the Eastern Mediterranean, 2019 (<https://applications.emro.who.int/docs/RC66-R5-eng.pdf?ua=1>).
2. World Health Organization Regional Office for the Eastern Mediterranean (WHO/EMRO). Technical paper EM/RC66/6, Developing National Institutional Capacity for Evidence Informed Policy Making for Health. Cairo: WHO/EMRO; 2019 (https://applications.emro.who.int/docs/RC_Technical_Papers_2019_6_en.pdf?ua=1).
3. Framework for improving national institutional capacity for use of evidence in health policy-making in the Eastern Mediterranean Region; appended to RC technical paper EM/RC66/6. Cairo: WHO/EMRO; 2019 (<https://applications.emro.who.int/docs/EMSID001E.pdf>).
4. World Health Organization Regional Office for the Eastern Mediterranean (WHO/EMRO). Summary report on the Inter-country consultative meeting for the Network of Institutions for Evidence and Data to Policy (NEDtP) and finalizing the regional action plan for evidence-informed policy-making. Cairo: WHO/EMRO; 2020 (<https://applications.emro.who.int/docs/WHOEMEDP001E-eng.pdf?ua=1>).

Members of the WHO Regional Committee for the Eastern Mediterranean

Afghanistan · Bahrain · Djibouti · Egypt · Islamic Republic of Iran · Iraq · Jordan · Kuwait · Lebanon
Libya · Morocco · Oman · Pakistan · Palestine · Qatar · Saudi Arabia · Somalia · Sudan · Syrian Arab Republic
Tunisia · United Arab Emirates · Yemen

البلدان أعضاء اللجنة الإقليمية لمنظمة الصحة العالمية لشرق المتوسط

الأردن · أفغانستان · الإمارات العربية المتحدة · باكستان · البحرين · تونس · ليبيا · جمهورية إيران الإسلامية
الجمهورية العربية السورية · جيبوتي · السودان · الصومال · العراق · عُمان · فلسطين · قطر · الكويت · لبنان · مصر · المغرب
المملكة العربية السعودية · اليمن

Membres du Comité régional de l'OMS pour la Méditerranée orientale

Afghanistan · Arabie saoudite · Bahreïn · Djibouti · Égypte · Émirats arabes unis · République islamique d'Iran
Iraq · Libye · Jordanie · Koweït · Liban · Maroc · Oman · Pakistan · Palestine · Qatar · République arabe syrienne
Somalie · Soudan · Tunisie · Yémen

Correspondence

Editor-in-chief

Eastern Mediterranean Health Journal
WHO Regional Office for the Eastern Mediterranean
P.O. Box 7608
Nasr City, Cairo 11371
Egypt
Tel: (+202) 2276 5000
Fax: (+202) 2670 2492/(+202) 2670 2494
Email: emrgoemhj@who.int

Subscriptions and Permissions

Publications of the World Health Organization can be obtained from Knowledge Sharing and Production, World Health Organization, Regional Office for the Eastern Mediterranean, PO Box 7608, Nasr City, Cairo 11371, Egypt (tel: +202 2670 2535, fax: +202 2670 2492; email: emrgoksp@who.int). Requests for permission to reproduce, in part or in whole, or to translate publications of WHO Regional Office for the Eastern Mediterranean – whether for sale or for noncommercial distribution – should be addressed to WHO Regional Office for the Eastern Mediterranean, at the above address; email: emrgoegp@who.int.

Editorial

COVID-19 pandemic: a unique opportunity to ‘build back fairer’ and reduce health inequities in the Eastern Mediterranean Region

Ahmed Al-Mandhari, Michael Marmot, Abdul Ghaffar, Rana Hajjeh, Jessica Allen, Wasiq Khan and Maha El-Adawy217

Commentaries

The COVID-19 pandemic: an opportunity to strengthen health systems in Afghanistan

Umerdad Khudadad, Najibullah Safi, Wafa Aftab, Asrar Ali, and Sameen Siddiqi.....220

Professional capacity building of researchers, health-care professionals and editors of biomedical journals in the Eastern Mediterranean Region

Shaukat Ali Juwaid224

Research articles

Four-year survey of medically serious suicide attempters in Abu Dhabi

Tarek Shahrouf, Muez Siddiq, Sona Mohan, Khadija El Hammasi and Taoufik Alsaadi227

Views of primary health care providers of the challenges to screening for intimate partner violence, Egypt

Eman Ibrahim, Nashwa Hamed and Lamia Ahmed233

Domestic violence among Omani women: prevalence, risk factors and help-seeking behaviour

Asma Al Kendi, Nohour Al Shidhani and Maisa Al Kiyumi242

Child maltreatment: knowledge, attitudes and reporting behaviour of physicians in teaching hospitals, Egypt

Nourhan Saeed, Eman Anwar Sultan, Naglaa Salama, Mohammed Galal and Maha Ghanem250

Prevalence and correlates of depressive symptoms in older people in the West Bank, Palestine: cross-sectional study

Manal Badrasawi and Souzan Zidan260

Effect of latitude on seasonal variations of vitamin D and some cardiometabolic risk factors: national food and nutrition surveillance

Bahareh Nikooyeh, Zahra Abdollahi, Nastaran Shariatzadeh, Ali Kalayi, Maliheh Zahedirad and Tirang Neyestani269

Salt intake and its sources in children, adolescents and adults in the Islamic Republic of Iran

Noushin Mohammadifard, Atena Mahdavi, Alireza Khosravi, Ahmad Esmailzadeh, Awat Feizi and Nizal Sarrafzadegan279

The effect of an educational intervention on awareness of various aspects of pulmonary tuberculosis in patients with the disease

Kalthoum Yousif, Mabrouka El Maki, Rosa Khalil Babikir and Hasan Abuaisha287

Moroccan Arabic version of the Quality of Life Inventory in Epilepsy (QOLIE-31): translation, cultural adaptation and psychometric validation

Maryam Alami Merrouni, Abdelkrim Janati Idrissi, Abdelazizi Lamkaddem, Filankembo Kava A.C. Samira El Fakir and Zouhayr Souirti293

Review

Views of stakeholders on factors influencing shared decision-making in the Eastern Mediterranean Region: a systematic review

Nouf Alsulamy, Andrew Lee, Praveen Thokala and Tourkiah Alessa300

Letter to the editor

Mass immunization and COVID-19: the need for continued primary health care

Rahim Badrfam and Atefeh Zandifar312

WHO events addressing public health priority

Developing national institutional capacity for evidence-informed policy-making for health314