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Regional Office for the Eastern Mediterranean

المجلة الصحية لشرق المتوسط

EMHJ

Eastern Mediterranean Health Journal

La Revue de Santé de la Méditerranée orientale

High salt intake is a risk factor for high blood pressure, which in turn is a risk factor for both stroke and coronary heart disease. Salt intake in the Eastern Mediterranean Region (EMR) is high and bread, which is a major part of the EMR diet, accounts for a large proportion of salt intake. There is an urgent need to decrease salt consumption in the Region in order to reduce deaths from strokes and heart attacks.

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المجلة الصحية لشرق المتوسط

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

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 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.

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 des ser-vices 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.

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المجلة الصحية لشرق المتوسط

EMHJ

Editorial

The work of WHO in the Region: a review of 2014

Ala Alwan[1]

This December issue of EMHJ presents me with the opportunity to look back on what has been a unique year in many ways. Readers may not be widely aware of the range of work that WHO undertakes in the Region and of the contributions made by its staff and experts.

We made good progress in 2014 in the five priority areas of work endorsed by our Member States: health systems strengthening, control of communicable diseases, maternal and child health, noncommunicable diseases and emergency preparedness and response. This resulted in some important and innovative products to support health development in the Region, including a framework for health information systems and core indicators, a framework for action on advancing universal health coverage, and an updated framework for action to implement the UN political declaration on prevention and control of noncommunicable diseases. WHO is supporting the nine high-burden countries as they move forward with implementing the plans to accelerate achievement of the Millennium Development Goals 4 and 5.

A successful session of the Regional Committee, which comprised representatives from the Member States, was concluded with the endorsement of just three resolutions focused on the strategic action needed in a few critical areas, including health security and noncommunicable diseases. We will now look to getting on with the work in hand and producing results in the areas we have promised. We have also made some progress in streamlining management structures, and in transparency, accountability and monitoring of our output. We will continue to pursue quality in our support to Member States.

2014 saw an unprecedented number of emergency events across several countries, in particular Iraq, Jordan, Libya, Pakistan, Palestine, Somalia, Syria and Yemen. Of the five high-level grade 3 emergencies to which WHO is responding around the world, two of them are in this region, in Syria and Iraq. In total, including the number of protracted crises in the Region, of the 22 Member States, about two thirds are facing or have faced major emergencies and crises in 2014. The situation is intense and the potential health threats and consequences will continue to be a concern to us all.

On visits this past year to Mogadishu, Gaza, Ramallah, Baghdad, Erbil and Damascus I witnessed the work being carried out by WHO staff and nationals in exceptionally demanding conditions. We have worked intensely, with national and United Nations colleagues and other partners, to respond to developments on the ground. Key public health measures in such situations have included situation assessment, ensuring safe drinking-water and sanitation, strengthening early warning systems for the detection of diseases, and pre-positioning medicines and medical supplies, in addition to emergency mass vaccination campaigns. However, there is clearly a need to strengthen our emergency response and reinforce our capacity in coordinating international and regional health relief activities in the crisis-affected countries.

It has been a year also that has reminded us, yet again, that infectious diseases, for all we may think we have them under control, can reappear at any time. We commenced the year with a major push to prevent further polio outbreaks and to find solutions that will finally enable polio eradication. Despite the setback in Pakistan, where progress is deliberately impeded by sustained violence, our response and the extensive campaigns conducted in Syria and neighbouring countries, as well as Somalia, were effective and appreciated by the international community. Mid-year, we put major effort into working with countries in the Region, in particular Saudi Arabia, to contain the novel coronavirus now known as Middle East respiratory syndrome (MERS). We have ended the year with helping Member States in strengthening preparedness to deal with Ebola, conducting assessment missions in almost all countries in the space of just two months. Ebola will continue to be a global concern for some months to come but I hope that these assessments will have impact and strengthen countries ability to protect against potential imported cases, and to deal with them if they occur.

Our experience in managing emergencies and the current global experience in managing the Ebola outbreak, demonstrate the extent to which the world, including our region, is ill prepared to respond to serious public health emergencies. In particular, public health capacity to detect, adjust and respond to emerging health threats still needs to be considerably strengthened.

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As we look forward to a new year, I anticipate that the circumstances will continue to be challenging. Clearly, countries in crisis expect WHO to do more in scaling up response action and technical support in the weeks and months to come. Our region currently hosts more than 50% of the world's refugee population. It is crucial that we further strengthen our work in order to meet the huge needs of the populations concerned, as well as lead the efforts for efficient recovery of the health sector. In Pakistan, the response of the government, WHO and all the partners in the coming months will be a key factor in completing the job of polio eradication.

Needless to say, 2015 will be a challenging year for WHO. The world looks to WHO for leadership, placing their confidence and trust in our ability to respond to their expectations. We recognize that success in meeting the challenge will depend on our technical support, dedication and performance.

Editorial

Reducing population salt intake in the Eastern Mediterranean Region – time for urgent action

Clare Farrand, Feng J. He and Graham A. MacGregor

Dietary salt raises blood pressure, and raised blood pressure is the single biggest cause of cardiovascular death and disability, accounting for 9.4 million deaths per year worldwide (*1*). The evidence for the health benefits of population-wide reduction in salt intake is strong. Indeed, salt reduction is one of the most cost-effective measures to prevent cardiovascular disease (CVD) in both developed and developing countries (*2*).

Noncommunicable diseases (NCDs), such as heart attacks and strokes, cancers, diabetes and chronic respiratory disease, account for over 63% of deaths in the world today. Every year, NCDs kill 9 million people under 60 years. The socioeconomic impact is staggering. Such is the problem that in 2011, the United Nations and the World Health Organization (WHO) jointly convened a high level meeting to tackle the growing burden of these "lifestyles diseases". Salt reduction was recommended as one of the top three priority actions to reduce premature mortality from NCDs by 25% by 2025 (*3,4*). WHO now recommends a 30% reduction in salt intake by 2025 with an eventual target of 5 g per day for all adults worldwide and lower levels for children based on calorie intake (*5*). This target was formally adopted by Member States at the 66th World Health Assembly as part of an omnibus resolution to tackle NCDs (*6*).

So, the question is how to reduce salt intake in the population to meet the target? World Action on Salt and Health (WASH), a non-profit charitable organization with a mission to reduce salt intake globally, has been working with many countries around the world to help establish effective salt reduction programmes to suit the needs of that particular country to reduce salt intakes[1] (*7*). For example, it is well established that in developed countries, most of the salt that we eat comes from the food that we buy (75–80%). Therefore the most effective means to reduce salt consumption in these countries is to reduce the salt content of manufactured and catered foods, supplied by the food industry. In developing countries, where most of the salt is added by consumers, a public health campaign plays a major role (*8*).

Further to this, as diets are becoming more westernized, processed foods are becoming more popular in developing countries, and the food industry is continuing to develop its market in these areas. Therefore, these countries need a combined policy of getting the public to use less salt at home and getting the food industry to reduce the amount of salt added to foods and to adopt a clear labelling system such as the signpost labelling system (*9*).

In the Eastern Mediterranean Region (EMR) current salt intakes are very high, with an average intake of > 12 g per person per day in most countries; more than double the amount recommended by WHO.

The disease burden resulting from salt and high blood pressure is very high in the EMR (*10*). Indeed, it has been identified as a hotspot for cardiovascular and coronary heart diseases. It is estimated that, overall, 47% of the Region's burden of disease is due to NCDs, and by 2020 it is expected to rise to 60% unless efficient health and nutrition measures are implemented (*11*).

Currently there are no comprehensive policies to reduce population salt intake in the Eastern Mediterranean countries; however many countries are now starting to take action to formulate salt reduction action plans. Sources of salt in the diet come from both processed foods and salt added during the preparation of food at home. A two-pronged approach, of reformulation and a public awareness campaign would be required to reduce salt intakes.

The United Kingdom (UK) has successfully implemented a salt reduction programme (Figure 1). As a result, salt intake has fallen by over 15% over the past 7–8 years, accompanied by a significant fall in population blood pressure and cardiovascular diseases (Figure 2). The UK's salt reduction model could be adapted by the EMR with appropriate local modifications. A

1 WASH is encouraging action groups to be formed in each country. To join, please email WASH (wash@qmul.ac.uk) or visit the WASH website for more information – www.worldactiononsalt.com.

Wolfson Institute of Preventive Medicine, Barts and The London School of Medicine & Dentistry, Queen Mary University of London, London, United Kingdom (Correspondence to Clare Farrand: c.e.farrand@qmul.ac.uk).

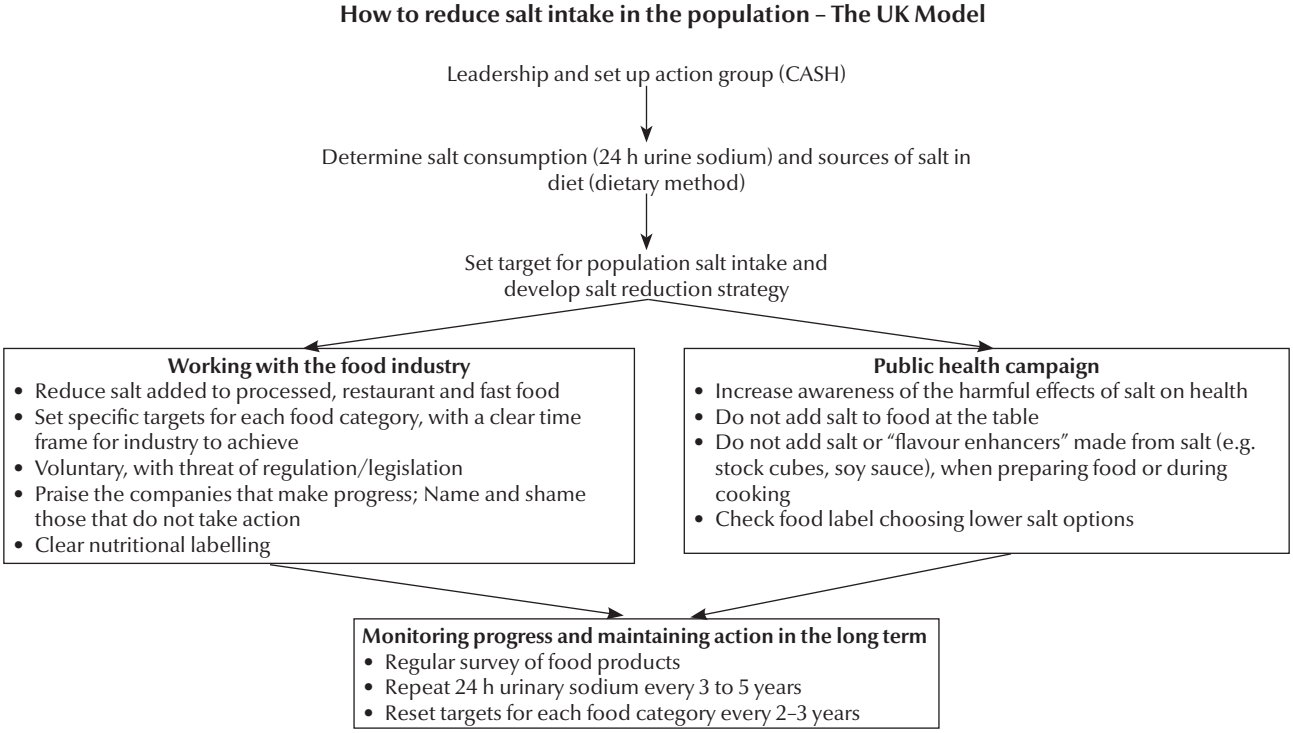

Figure 1 An action framework for reducing salt intake in the population – The United Kingdom Model. CASH (Consensus Action on Salt and Health) is a non-profit charitable organization focused on salt reduction in the United Kingdom. [He FJ, Brinsden HC, MacGregor GA. Salt reduction in the United Kingdom: a successful experiment in public health. J Hum Hypertens. 2014 Jun;28(6):345-52. doi: 10.1038/jhh.2013.105. Epub 2013 Oct 31. PMID:24172290]

key element of the success of the UK salt reduction programme is the rigorous setting of progressively lower salt targets for over 80 categories of foods, with a clear timeframe and independent monitoring programme. For example, in the UK, salt levels in bread have come down by an average of 20% since the setting of salt targets (*12*). Bread is an important part of many diets around the world. Reducing salt in bread would have a big impact on salt intakes, and many countries around the world are already focusing their attention on reducing the salt contents of bread.

This example demonstrates how a salt reduction strategy, based on targets in key food categories, can ensure that salt levels are reduced without loss of sales and with no consumer reaction. Governments around the world now need to follow the UK's lead and set targets on the biggest contributors of salt to the diet so as to prevent thousands of deaths every year; the United States, Canada and Australia are already following the UK's lead and setting their own voluntary targets.

The UK salt reduction programme has been carried out on a voluntary basis, but this has been underpinned by sustained media pressure, direct pressure on the government and ministers, particularly the public health ministers, so that they would maintain a strong stance with the food industry. Regulatory/legislative approaches are likely to be more effective than voluntary approaches. However, in many countries, the process of legislation is very complicated and this may lead to severe delays in action, as demonstrated by the pace of tobacco legislation (e.g. taxation and banning smoking in all workplaces) coming into force (*13*).

Countries within the EMR would need to consider their own political processes to determine whether a regulatory/legislative or voluntary approach is more appropriate. Recently, South Africa has started a similar programme based on the UK model, but the salt targets are regulated and the global food companies there preferred a regulatory system rather than a voluntary system as it gave them a level playing field (*14*). For many other countries, the best way to proceed is to start with a voluntary salt reduction policy with the threat of regulation/legislation and, at the same time, enact the legislation process.

Many organizations concerned with the effects of salt on health and blood pressure are working together to develop "toolkits" to implement salt reduction programmes, which can be used as a guide for countries to follow. It is imperative that all countries adopt a coherent and workable strategy to reduce salt intake in line with their own landscape. In view of the enormous benefits of salt reduction on public health, it would be negligent for any government not to take action now.

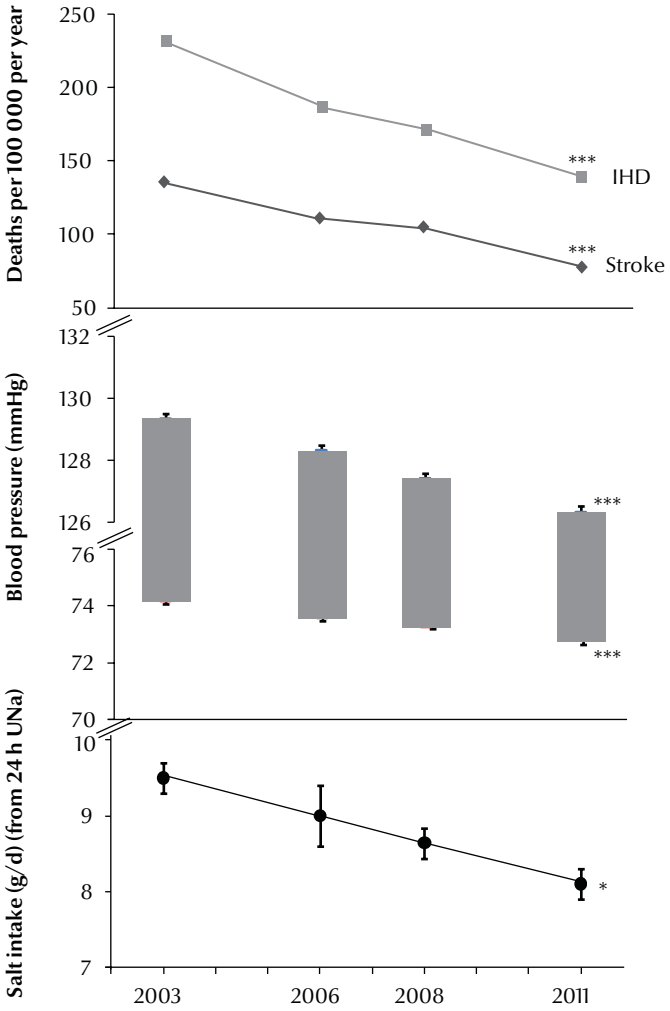

Figure 2 Changes in salt intake as measured by 24-hour urinary sodium (UNa) excretion, blood pressure (BP), stroke and ischemic heart disease (IHD) mortality in England from 2003 to 2011 (*$P < 0.05$ and ***$P < 0.001$ for trend) [He FJ, Pombo-Rodrigues S, MacGregor GA. Salt Reduction in England from 2003 to 2011: its relationship to blood pressure, stroke and ischaemic heart disease mortality. BMJ Open. 2014 Apr 14;4(4):e004549. doi: 10.1136/bmjopen-2013-004549. PMID:24732242]

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Tobacco use and associated factors among school students in Dubai, 2010: intervention study

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تعاطي التبغ والعوامل المرتبطة به لدى طلبة المدارس في دبي، 2010: دراسة تدخلية

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الخلاصة: يُعَدُّ تدخين التبغ مشكلة مستجدة لدى مَن هم في مرحلة المراهقة في الإمارات العربية المتحدة. وقد هدفت هذه الدراسة إلى قياس مدى الانتشار الحالي لتعاطي التبغ والعوامل المرتبطة به لدى طلبة المدارس في إمارة دبي، وإلى تحديد أثر أحد برامج التدخل على المعرفة بتعاطي التبغ وعلى المواقف تجاهه. فتم إجراء دراسة تدخلية مدرسية على 2457 طالباً بأعمار 10-20 سنة، وتم جمع البيانات باستخدام استبيان ذاتي. فكان 14.6٪ من الطلاب يتعاطون التبغ؛ في الغالب السجائر (11.2٪) أو النارجيلة (2.2٪). وكانت الأسباب الشائعة للتدخين: للتجربة (29.4٪)، ولتخفيف التوتر (22.5٪)، ولأن أقرانهم يدخنون (21.9٪). وأظهر تحليل التحوّف اللوجستي المتدرج أن المنبئات عن تعاطي التبغ هي أن يكون المرء ذكراً، وأعلى سناً، ومواطناً إماراتياً، وفي مستوى مدرسي أعلى، وفي مدرسة حكومية، وقليل المعرفة عن التبغ، وذا تاريخ عائلي للتدخين. وكان هناك تحسن كبير في الدرجات المُحْرَزَة في مجال المعرفة والمواقف بعد برنامج التدخل المعني بالتثقيف الصحي.

ABSTRACT Tobacco smoking is an emerging problem among adolescents in the United Arab Emirates (UAE). This study aimed to measure the prevalence of current tobacco use and its associated factors among school students in Dubai Emirate and to determine the impact of an intervention programme on knowledge and attitudes towards tobacco use. A school-based intervention programme was carried out among 2457 students aged 10–20 years and data were collected with a self-administered questionnaire. Of the students, 14.6% were tobacco users, mostly cigarettes (11.2%) and waterpipes (2.2%). The most common self-reported reasons for smoking were for the experience (29.4%), for stress relief (22.5%) and because their peers smoked (21.9%). Stepwise logistic regression analysis showed that the predictors of tobacco use were: male, higher age, UAE national, higher school level, government school, low knowledge about tobacco and family history of smoking. There were significant improvements in knowledge and attitudes scores after the health education intervention programme.

Tabagisme et facteurs associés chez des élèves à Dubaï, 2010 : étude d'intervention

RÉSUMÉ Le tabagisme chez les adolescents aux Émirats arabes unis représente un problème récent. La présente étude visait à mesurer la prévalence actuelle du tabagisme et les facteurs associés chez des élèves dans l'Émirat de Dubaï. Elle avait également pour objectif de déterminer l'impact d'un programme d'interventions sur leurs connaissances et attitudes à l'égard du tabagisme. Un programme d'interventions a été mené en milieu scolaire auprès de 2457 élèves âgés de 10 à 20 ans. Les données ont été recueillies à l'aide d'un questionnaire auto-administré. Parmi les élèves interrogés, 14,6 % étaient des consommateurs de tabac, principalement de cigarettes (11,2 %) ou de pipes à eau (2,2 %). Les raisons les plus fréquentes motivant la consommation de tabac étaient le fait d'expérimenter (29,4 %), l'atténuation du stress (22,5 %) et la consommation de tabac par les pairs (21,9 %). L'analyse de régression logistique par étapes a démontré que les facteurs prédictifs du tabagisme étaient les suivants : être de sexe masculin, être plus âgé, avoir la nationalité émirienne, avoir un niveau scolaire plus élevé, fréquenter une école publique, avoir de faibles connaissances sur le tabac et venir d'une famille de fumeurs. Des améliorations notables ont été constatées dans les scores sur les connaissances et les attitudes après la mise en oeuvre du programme d'interventions d'éducation pour la santé.

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Introduction

Tobacco use is one of the biggest public health threats the world has ever faced (*1*). Tragically, the epidemic is shifting towards the developing world, where 80% of tobacco-related deaths will occur within a few decades. Tobacco has killed more than 100 million people in the 20th century and it is expected to kill billions in the 21st century. The shift has been attributed to a global tobacco industry marketing strategy that targets young people and adults in developing countries (*1*).

Adolescence is a period of physical, cognitive and emotional change and of searching for a personal identity that frequently involves experimentation with various risky behaviours including smoking (*2*). In most countries, the great majority of smokers begin to use tobacco before the age of 18 years (*3,4*). Adolescents who start smoking at an early age seem to be at much greater risk of the adverse health consequences of smoking than late starters. Also, nicotine addiction among these early smokers appears more severe than that among late starters (*5*). Saudi Arabia has reported a high prevalence of current smoking (29.8%) among schoolboys and found that 83.7% of them started smoking at or before the age of 15 years (*6*). The Global Youth Tobacco Survey in Egypt in 2005 reported that 13.6% of students had ever smoked cigarettes and 14.4% currently use any tobacco product (*7*). According to the Global School-based Student Health Survey in the United Arab Emirates (UAE), conducted in 2005, 12.7% of students had used any tobacco on 1 or more days during the past 30 days and about 9.3% of students had smoked cigarettes (*8*).

It has been reported that the main reasons why adolescents start smoking are emulation, curiosity, friendship effect, stress, "proving themselves" to peers and the presence of a family member who smokes (*9*). Knowledge and attitudes about smoking are significantly associated with smoking. It was reported that a high prevalence of smoking was associated with poor knowledge about smoking and a low attitude score (*10*). Tobacco control legalization in the UAE started after the launch of an anti-tobacco federal law in 2009, which applied a smoking ban in all public premises including schools and universities (*11*). The legislation makes it illegal to sell cigarettes to anyone under 18 years or to smoke in cars carrying children under 12 years old (*12*).

The increasing magnitude of the tobacco smoking habit among adolescents in the UAE is an emerging problem that needs to be thoroughly studied in order to plan for proper control measures and to develop effective policies for smoking prevention and cessation programmes. The objectives of the current study were 2-fold: to measure the prevalence of current tobacco use (smoked and smokeless tobacco products) among school students in Dubai and the factors associated with tobacco use; and to determine the impact of a health education intervention programme on knowledge and attitude of students towards tobacco use and its hazards.

Methods

Study design and setting

A school-based intervention study (quasi-experimental) was carried out in preparatory and secondary schools in Dubai. The target population was male and female school students in school grades 7 to 12.

Sampling

The sample size was calculated using the computer program *Epi-info*, version 6.04. The total number of preparatory- and secondary-school students in Dubai was 77 118, and using 2% degree of precision, estimated prevalence of tobacco use among adolescents of 19.5% (from a previous, similar study in UAE) (*8*), 1.5 design effect and 95% confidence interval the minimum sample size required was 2219.

Stratified random sampling with proportional allocation was carried out. Stratification was based on the administrative regions of Dubai (Deira or Bur Dubai), sex (male or female), type of school (government or private) and school grade (preparatory or secondary). Overall, in both Deira and Bur Dubai the total number of private schools exceeded the number of government schools by 3 to 1. Thus 24 private schools and 8 government schools were randomly selected from both regions. For the private schools 12 schools were selected randomly from each region (6 for males and 6 for females) and for the government schools 4 schools were selected randomly from each region (2 for males and 2 for females). One class was selected randomly from each of selected preparatory (grades 7–9) and secondary (grades 10–12) schools and all the students in the selected classes were invited to participate in the survey.

The total sample size amounted to 2457. All selected schools as well as all the students within the selected schools agreed to participate in the study (response rate 100%).

Data collection

Questionnaire

The data were collected from students using an anonymous, self-administered, pre-coded questionnaire. It consisted of 32 questions. Filling the questionnaire took approximately 10 min. Students were assured that the information they provided would remain confidential and thus were encouraged to be truthful in their responses. They were informed that their participation was completely voluntary. The questionnaire was distributed in English for private-school students (1976 students) and in Arabic for government-school students (481 students). The questionnaire was originally designed in English then

back-translated into Arabic and reviewed by a community professional.

The questionnaire collected the following information from the participants: sociodemographic characteristics such as type of school, age, sex, nationality (local, i.e. UAE nationality, or non-local, i.e. non-UAE nationality), grade of education and parents' education; family history of smoking; knowledge about tobacco use and the health risks of using it; and attitudes to smoking.

The knowledge questions were adopted from the Global Youth Tobacco Survey and other studies that revealed satisfactory reliability (Cronbach α around 0.84) (*13,14*). The students were asked if they thought that tobacco use was harmful to health and that smoking tobacco can be addictive like heroin. It also included questions regarding other hazards of smoking such as cancer, cardiovascular diseases and respiratory tract diseases. In addition, they were asked if using tobacco was bad only if it was used for many years and whether smoking in close public places can be harmful to non-smokers. Each item had a choices of 3 answers (no, yes or don't know) and a score of 0 was given for the incorrect answer or don't know and score of 1 for the correct answer, giving a score range for the knowledge scale of 0–7. The scores were summed and students were categorized into 3 groups: poor knowledge (score < 50%), fair knowledge (score 50–74%) and good knowledge (score ≥ 75%).

The questions to assess the attitude of students toward tobacco use were adopted from the Global Youth Tobacco Survey and other studies that revealed satisfactory reliability (Cronbach α around 0.82) (*13–15*). Students were asked if they thought that tobacco use was a bad habit, made them relax and cope with stress, made them more attractive, made them less healthy, led to bad smells and affected their performance in sports. They were also asked if they believed that tobacco must be banned in closed places or not and whether parents should not allow their children to use tobacco or not. Each item had 3 choices (agree, not sure or disagree) and a score of 1 was given for negative attitude, 2 for neutral and 3 for positive attitude, giving a score rage for the attitude scale of 11–33. The total scores were calculated and the students were classified into 3 groups: negative attitude (i.e. favourable towards smoking) (score < 50%), neutral attitude (score 50–< 74%) and positive attitude (i.e. unfavourable towards smoking) (score ≥ 75%).

Data about tobacco use included questions about tobacco product use (cigarettes, waterpipes, pipes, cigars and chewing tobacco) during the 30 days preceding the survey. Questions were asked about the age at which tobacco use was initiated, duration of use as well as students' self-reported reasons for use, such as peer pressure, self-achievement, parents' smoking, stress reduction, social problems or simply to imitate adults. In addition, we asked about exposure to other people's smoking (second-hand smoke exposure) and their desire to quit tobacco use.

Operational definition

World Health Organization (WHO) definitions were used which define the prevalence of current tobacco use among youth as the prevalence of tobacco use (including smoking cigarettes, pipes, cigars, waterpipes and oral tobacco) on more than 1 occasion in the 30 days preceding the survey, regardless of amount used (*11*).

Intervention – health education programme

The health education programme was conducted in the 1 academic year 2009–2010 and targeted all the selected schools. During this period the selected schools chose a date for the allocated class to conduct the pre-test questionnaire followed immediately by a 1-day intervention programme, then after an interval of 2 weeks the second date was allocated for the same class to complete the post-test questionnaire. The intervention programme consisted of a health education session that discussed the hazards of smoking. This was conducted through lecture presentations and video shows on the hazards of use of various tobacco products. Educational materials about the hazards of tobacco use were distributed. The programme was conducted by a professional team of physicians trained in this field.

Ethical considerations

An approval was obtained from the Dubai Knowledge and Human Development and Dubai Health Authority after explaining the purpose of the study. Approval was also taken from all participating schools and it was made clear to students that participation was completely voluntary. Absolute confidentiality of the data was maintained throughout the study.

Statistical analysis

The data were analysed using *SPSS* software program, version 19.0. The following statistical analyses were performed. The data were presented by frequency tables and graphs. Descriptive statistics were presented for quantitative variables [mean, standard deviation (SD) and range]. The chi-squared test was used for testing the relationship between sociodemographic factors, knowledge, attitude and tobacco use. The paired t-test was used for comparing the mean scores before and after the intervention programme in both the knowledge and attitude domains. $P < 0.05$ was the cut-off level of significance.

Stepwise logistic regression was carried out to adjust the confounders and delineate the predictors for tobacco use. The dependent factor was any tobacco use (0 = no, 1 = yes). The independent factors were: age (continuous variable),

sex (0 = female, 1 = male), nationality (0 = non-local, 1 = local), type of school (0 = government, 1 = private), school grade (0 = preparatory grades 7–9, 1 = secondary grades 10–12), parental education (0 = university level, 1 = secondary/preparatory, 2 = illiterate/primary), family history of smoking (0 = no, 1 = yes), and knowledge scores and attitude scores (continuous variables) towards tobacco use.

Results

Background characteristics

The present study included 2457 students, with a mean age of 14.85 (SD 1.67) years, range 10–20 years. Due to the higher number of private schools, the number of non-UAE national students who participated (1545 students) were greater than the UAE national students (912 students). Table 1 shows that 80.4% of the sample were from private schools, over half were males (54.4%) and 62.9% were non-locals. The majority of students' parents had university education or higher (68.3% and 76.4% for mothers and fathers respectively). Among the respondents 29.1% reported that they were exposed to second-hand smoke at home.

Prevalence of smoking

Out of 2457 students, there were 359 self-reported tobacco smokers (14.6%). Cigarette smoking was the most prevalent type of tobacco use (11.2%), while waterpipes (*shisha*) were used by only 2.2%, pipes by 1.9% and cigar and chewing tobacco by 0.8% each.

Reasons for smoking

The most common self-reported reasons for smoking were to try out the experience (29.4%), relieving stress (22.5%) and peers' smoking (21.9%). Some students reported that the reasons related to social problems (6.4%), parents' smoking (6.0%) or to improve self-achievement (3.7%).

Knowledge and attitudes towards tobacco use

Concerning knowledge and attitudes, it was found that before the intervention programme 35.0% of the students had a poor level of knowledge about tobacco use and its hazards and 41.3% demonstrated negative attitudes (i.e. were favourable) towards tobacco use. Mean knowledge scores were significantly higher among non-tobacco users compared with any tobacco users [5.58 (SD 1.79) versus 5.27 (SD 2.02) respectively] (P = 0.004). The same pattern was observed for the mean attitude scores [29.28 (SD 3.29) and 28.68 (SD 3.50) respectively] (P = 0.004) (Table 2).

Table 1 Distribution of school students according to demographic characteristics, Dubai 2010

Demographic characteristic	Total (n = 2457)	
	No.	%
Type of school		
Government	481	19.6
Private	1976	80.4
School grade		
Preparatory	1327	54.0
Secondary	1130	46.0
Sex		
Male	1337	54.4
Female	1120	45.6
Age (years)		
10–	34	1.5
12–	539	23.0
14–	889	38.0
16–	784	33.5
18–	93	4.0
Mean (SD)	14.85 (1.67)	
Nationality		
Local	912	37.1
Non-local	1545	62.9
Mother's educational level[a]		
Illiterate	116	4.8
Primary	103	4.2
Preparatory	99	4.1
Secondary	451	18.6
University	1657	68.3
Father's educational level[b]		
Illiterate	79	3.3
Primary	51	2.1
Preparatory	136	5.6
Secondary	307	12.6
University	1857	76.4
History of smoking in the family		
No	1742	70.9
Yes	715	29.1

[a]*Missing data for 31 students;* [b]*Missing data for 27 students.*
SD = standard deviation.

Table 2 Demographic characteristics and knowledge and attitudes towards tobacco among school students according to tobacco use status, Dubai 2010

Variable	Total (*n* = 2457)	Any tobacco use				*P*-value[a]
		No (*n* = 2098)		Yes (*n* = 359)		
	No.	No.	%	No.	%	
Type of school						
Government	481	369	76.7	112	23.3	< 0.001
Private	1976	1729	87.5	247	12.5	
School grade						
Preparatory	1327	1155	87.0	172	13.0	0.012
Secondary	1130	943	83.5	187	16.5	
Sex						
Male	1337	1047	78.3	290	21.7	< 0.001
Female	1120	1051	93.8	69	6.2	
Age (years)						
10–	34	33	97.1	1	2.9	
12–	539	500	92.8	39	7.2	
14–	889	756	85.0	133	15.0	< 0.001
16–	784	660	84.2	124	15.8	
18+	93	59	63.4	34	36.6	
Nationality						
Local	912	733	80.4	179	19.6	< 0.001
Non-local	1545	1365	88.3	180	11.7	
Mother's education						
Illiterate	116	98	84.5	18	15.5	
Primary	99	84	84.8	15	15.2	
Preparatory	103	76	73.8	27	26.2	0.017
Secondary	451	387	85.8	64	14.2	
University	1657	1427	86.1	230	13.9	
Father's education						
Illiterate	79	50	63.3	29	36.7	
Primary	136	104	76.5	32	23.5	
Preparatory	51	44	86.3	7	13.7	< 0.001
Secondary	307	258	84.0	49	16.0	
University	1857	1618	87.1	239	12.9	
Family history of smoking						
No	1742	1542	88.5	200	11.5	< 0.001
Yes	715	557	77.9	158	22.1	
Knowledge and attitudes towards tobacco		Mean (SD)		Mean (SD)		
Knowledge score	2346	5.58 (1.79)		5.27 (2.02)		0.004[b]
Attitude score	2340	29.28 (3.29)		28.68 (3.50)		0.004[b]

[a]*Chi-squared test;* [b]*t-test.*
SD = standard deviation.

Factors associated with tobacco use

Regarding sociodemographic characteristics, Table 2 shows that 23.3% of smokers were attending government schools and only 12.5% private schools, and this difference was statistically significant ($P < 0.001$). Males had a significantly higher rate of tobacco use than females (21.7% versus 6.2%) ($P < 0.001$). In addition, locals (UAE nationals) were more likely to be tobacco users than non-locals (19.6% versus 11.7%) ($P < 0.001$). Concerning parents' education,

students of illiterate or primary-educated parents had the highest rates of tobacco use (15.5% and 15.2% for mothers and 36.7% and 23.5% for fathers respectively), while the lowest rates of use were observed among those of university or higher-educated parents (13.9% and 12.9% respectively for mother and fathers); these differences were statistically significant ($P = 0.017$ for mothers and $P < 0.001$ for fathers). Students with a family history of smoking were more likely to be tobacco users compared with those without such history (22.1% versus 11.5%) ($P < 0.001$).

Stepwise logistic regression analysis of the factors affecting tobacco users (Table 3) delineated 7 predictors for tobacco use: age, sex, nationality, school type, school grade, family history and knowledge about hazards of tobacco. Higher age, male sex, family history of smoking, being in secondary grade of education (10–12 years), being a UAE local and being in a government school were all significantly associated with a higher risk of tobacco use compared with those who were of younger age, female, with no family history of smoking, in preparatory grade of education (7–9 years), non-UAE nationality or being in a private school (ORs = 1.31, 4.15, 1.65, 1.50, 1.75 and 1.59 respectively). Furthermore, a higher score on knowledge about tobacco and its effects was associated with a lower risk of tobacco use.

Effect of intervention on knowledge and attitudes

Concerning the effect of the intervention programme on the knowledge and attitude of students towards tobacco use, Table 4 shows that there was an increase in the percentage of students with a good level of knowledge from 34.1% before to 51.9% after the intervention programme. The mean knowledge score increased significantly from 5.49 (SD 1.81) before to 6.14 (SD 1.31) after the intervention ($P < 0.001$). The same pattern was observed concerning attitudes; there was an increase in the rate of positive attitudes from 34.5% before to 48.7% after the intervention programme. Mean scores also increased from 28.31 (SD 4.04) to 29.23 (SD 3.99) ($P < 0.001$).

Discussion

The prevalence of tobacco use among adolescents is a valuable indicator for the prediction of future harm caused by tobacco and is therefore important for health-related policy-makers and programme planners in any country (*16*). Prevalence and trends in smoking vary from country to country, often dependent on the level of monitoring of tobacco use behaviour. The results of the present study revealed that the overall prevalence of current tobacco use in school students in the UAE was 14.6%; this was lower than previous surveys from Yemen in 2003 (*17*), Saudi Arabia in 2007 (*18*) and Jordan in 2007 (*19*) (prevalences of any current tobacco use were 19.3%, 17.3% and 21.8% respectively). Furthermore, a higher prevalence of tobacco use (24.5%) was reported in a Syria study in 2010 (*20*).

The present study established that smoking cigarettes was the predominant form of tobacco use among the current tobacco users (11.2%), and this was higher than the prevalence of current cigarette smoking reported in Oman in 2006 (4.5%) (*21*) and previously in the Dubai Emirate in 2010 (9.8%) (*8*). Results from Tehran, Islamic Republic of Iran in 2003 (*22*) reported that the prevalence of cigarette smoking was 28.2%, which was much higher than in the present study.

The prevalence of waterpipe smoking in our study was 2.2%, which was lower than the Saudi Arabian study (8.7%) (*18*) and far lower than a study in Lebanon (25.6%) (*23*).

Self-reported reason for tobacco use

The present study showed that 29.4% of students reported that trying out the experience was the main reason for tobacco use. This finding was similar to a Saudi Arabian study (*24*). Young students experience feelings of uncertainty about their self-image and consider themselves more or less dependent on the opinion and judgement of their peers. Meeting these expectations of one's peer group is essential to prevent loss of friends, becoming a loner and eventually losing one's social identity (*25*). Another reason for tobacco use among students in the present study was to relieve stress. This result was in accordance with a study in the United States of America (USA) (*26*).

Associated factors of tobacco use

Tobacco use was more common in the government than private schools, which can be explained by better educational

Table 3 Results of stepwise logistic regression of factors affecting tobacco use among school students, Dubai, 2010

Independent variables	β	*P*-value	OR	95% CI
Age	0.272	< 0.001	1.31	1.20–1.43
Sex	1.423	< 0.001	4.15	3.03–5.69
Family history of smoking	0.502	< 0.001	1.65	1.24–2.19
School grade	0.407	0.004	1.50	1.14–1.98
Nationality	0.558	< 0.001	1.75	1.31–2.33
Knowledge score	–0.160	< 0.001	0.85	0.78–0.93
Type of school	0.461	0.008	1.59	1.13–2.23
Constant	–6.622	< 0.001	0.001	

OR = odds ratio; CI = confidence interval; β = regression coefficient.

Table 4 Comparison of knowledge and attitude of school students towards tobacco smoking before and after the health education intervention programme, Dubai 2010

Variable	Before intervention		After intervention		*P*-value[c]
	No.	%	No.	%	
Knowledge level					
Poor	821	35.0	404	17.2	
Fair	724	30.9	725	30.9	
Good	801	34.1	1217	51.9	
Total mean (SD) score	5.49 (1.81)		6.14 (1.31)[a]		< 0.001
Attitude level					
Negative	966	41.3	714	30.5	
Neutral	566	24.2	486	20.8	
Positive	808	34.5	1140	48.7	
Total mean (SD) score	28.31 (4.04)		29.23 (3.99)[b]		< 0.001

[a]Data missing for 111 students; [b]Data missing for 117 students; [c]t-test.
SD = standard deviation.

activities or a close monitoring system and restrictions on the use of tobacco in private schools more than government schools, and may also be due to social class differences between the school populations.

Tobacco prevalence increased as age increased. This result is consistent with a previous study in Taiwan (*27*) but inconsistent with an Iranian study (*28*), in which the highest prevalence of tobacco use was reported among younger students compared with the older students. Exposure to tobacco advertising in the latter study was a strong correlate of tobacco use among younger students.

Males are typically at a much higher risk for tobacco use than are females and this was supported by the present study and others in the region, for example from the Syrian Arab Republic (*29*). This can be explained by smoking being a more acceptable social behaviour for males and also due to possible under-reporting by female students.

Higher stage of education tends to be associated with a higher likelihood of tobacco use. The present study agreed with this, as students in secondary grade classes were using tobacco more than those in the preparatory grades. This was also supported by the National Youth Tobacco survey in the USA in 2004, which found that 28% of high-school and 12% of middle-school students reported current tobacco use (*30*).

The present study found an inverse relationship between students' use of tobacco and parents' education. This is in agreement with other studies, for example in the USA (*31*). Highly educated parents are more knowledgeable about the health consequences of tobacco use and they can prevent their children from taking up tobacco.

The present study highlights the important effects of parents' and siblings' tobacco behaviour on current tobacco use by students. Tobacco use by parents and friends, knowledge about the harmful effects of tobacco, smoking, environmental smoke and attitudes to tobacco use by others were strongly associated with student tobacco use. Social learning theory suggests that learning (of an attitude or habit) occurs through observation, i.e. the parent's behaviour is normally copied by the children (*32*). This is consistent with the present study. Parents' tobacco use contributes to the onset of daily tobacco use in their teenagers even if parents practise good family management, hold norms against teen tobacco use and do not involve their children in their own tobacco use (*33*). We showed that students who did not use tobacco had better knowledge and attitudes toward tobacco use and its hazards than did tobacco users, and vice versa. These results are consistent with other studies, in south Australia (*34*) and Turkey (*35*).

Impact of intervention programme on knowledge and attitudes

Researchers have indicated that tobacco prevention programmes have positive influences on students' tobacco use and prevention of addiction. Therefore, in order to decrease the use of tobacco among teenagers, tobacco education programmes are suggested to cultivate students' positive perceptions and refusal skills (*36*). Youth are easily influenced by their favourite idols who smoke, and a positive correlation between a popular idol's smoking habits and adolescent smoking has been found (*37*). A Taiwanese study showed that students' post-intervention scores on the knowledge of tobacco hazard, anti-smoking attitudes and ability to refuse smoking were significantly higher than those in the pre-intervention period. This indicated that both the delivery of tobacco prevention brochures and the implementation of tobacco prevention programmes to reinforce teenager's

knowledge of tobacco hazards and attitudes against smoking were effective in decreasing youth smoking (*36*). Those findings are in accordance with the present study and a study in India (*38*).

This study has the same limitations inherent in any cross-sectional school survey, where data collection is limited to a single time point. Tobacco use status was assessed by self-reporting and therefore some students may have under-reported their tobacco use. Moreover, the existing taboos about tobacco use, especially among female students in this region, might also lead to under-reporting. The estimated prevalence in the study may therefore be slightly lower than the actual prevalence.

Conclusion and Recommendations

Tobacco use constitutes a real public health problem among this group of adolescents in the UAE. About 15% were self-reported current users of tobacco, and cigarette smoking was the most prevalent type. The most common reasons for tobacco use were trying out the experience, to relieve stress and peers' smoking. About one-third or more of the students demonstrated poor knowledge or negative (favourable) attitudes towards smoking. There was a significant improvement in knowledge and attitude scores after the 1-day intervention programme.

It is recommended that health education programmes to raise awareness about the hazards of smoking for teenagers and adolescents are continued in schools and that parents and concerned staff are actively engaged in the process, with an emphasis on encouraging youth support groups working against tobacco use among youth.

Competing interests: None declared.

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Role of smoke-free legislation on emergency department admissions for smoking-related diseases in Kocaeli, Turkey

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دور التشريعات الخالية من التدخين على معدّل القبول بقسم الطوارئ بسبب أمراض مرتبطة بالتدخين في كوجايلي بتركيا

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الخلاصة: لقد تم وضع تشريعات تحظر التدخين في جميع الأماكن العامة المغلقة في تركيا في تموز/ يوليو من عام 2009. وكان الهدف من هذه الدراسة تقييم تأثير التشريعات المتعلقة بالأماكن الخالية من التدخين على عدد المقبولين في قسم الطوارئ بسبب أمراض مرتبطة بالتدخين في مدينة قوجايلي . فقد أجري تحليل استعادي لسجلات المستشفيات الخاصة بالأشهر الستة الأولى من عامي 2009 و2010 (قبل التشريعات وبعدها). فكان إجمالي المقبولين بسبب أمراض مرتبطة بالتدخين 83089 في عام 2009 و64314 في عام 2010؛ بانخفاض قدره 22.6٪. وأظهر تحليل التسلسل الزمني أن الانخفاض كان كبيراً بالنسبة لالتهاب الشعب الهوائية وأمراض الجهاز التنفسي السفلي المُعدية. وكانت حالات القبول الطارئة بسبب الداء الرئوي المسِدّ المزمن واحتشاء عضل القلب والتهاب الأنف الأرجي أقل، ولكن ليس أقل بكثير. وأظهر عدد المرضى الذين قُبلوا لإصابتهم بالربو زيادة غير كبيرة. وخلص الباحثون إلى أنه قد يكون للتشريعات المتعلقة بالأماكن الخالية من التدخين تأثيرات هامة على حالات القبول في قسم الطوارئ على المدى القريب، ولكن لا بد من إجراء المزيد من الدراسات لتقييم آثار هذه التشريعات على الأمراض المرتبطة بالتدخين على المدى البعيد.

ABSTRACT Legislation banning smoking in all indoor public places was introduced in Turkey in July 2009. The aim of this study was to evaluate the role of smoke-free legislation on the number of emergency department admissions for smoking-related diseases in Kocaeli city. A retrospective analysis was made of hospital records from the first 6 months of 2009 and 2010 (before and after legislation). Total admissions for smoking-related diseases were 83 089 in 2009 and 64 314 in 2010, a 22.6% decrease. Time-series analysis showed that the decreases were significant for bronchitis and lower respiratory tract infections. Emergency admissions for chronic obstructive pulmonary disease, myocardial infarction and allergic rhinitis were lower but not significantly so. The number of patients admitted with asthma showed a non-significant increase. Smoke-free legislation might have important short-term effects on emergency department admissions, but further studies are needed in order to evaluate the long-term effects of legislation on smoking-related diseases.

Effets d'une législation antitabac sur le nombre de patients admis au service des urgences pour des maladies liées au tabagisme à Kocaeli (Turquie)

RÉSUMÉ La législation sur l'interdiction de fumer dans tous les lieux publics intérieurs a été adoptée en Turquie en 2009. L'objectif de la présente étude était d'évaluer les effets de la législation antitabac sur le nombre de patients admis aux urgences pour des maladies liées au tabagisme dans la ville de Kocaeli. Une analyse rétrospective des dossiers hospitaliers a été réalisée, et celle-ci portait sur les six premiers mois de 2009 (avant l'adoption de la législation) ainsi que sur les six premiers mois de 2010 (après l'adoption de la législation). Le nombre total d'hospitalisations pour des maladies liées au tabagisme était de 83 089 en 2009 et de 64 314 en 2010, représentant une baisse de 22,6 %. L'analyse des séries chronologiques a démontré que les diminutions étaient importantes pour la bronchite et les infections des voies respiratoires inférieures. Le nombre d'hospitalisations en urgence pour la bronchopneumopathie chronique obstructive, l'infarctus du myocarde et la rhinite allergique était inférieur mais la baisse n'était pas significative. Le nombre de patients asthmatiques hospitalisés a augmenté de manière non significative. Une législation antitabac peut produire d'importants effets à court terme sur le nombre d'hospitalisations au service des urgences, mais des études supplémentaires sont requises afin d'évaluer les effets à long terme de la législation sur les maladies liées au tabagisme.

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Introduction

Tobacco use is the leading cause of preventable disease and death worldwide (*1*). Certain health problems can be attributed to both active and second-hand smoke. Second-hand smoke is defined as involuntary exposure to a combination of diluted, side-stream cigarette smoke and exhaled smoke from smokers (*2*). There is increasing evidence that passive smoking is an important risk factor for chronic respiratory diseases. A number of studies suggest that asthma can be induced by exposure to passive smoking, and there is strong evidence to suggest that passive smoking increases the risk of general respiratory symptoms (*3–6*). In recent years, the mounting evidence available on the adverse effects of second-hand smoke has prompted several countries to introduce smoking bans in indoor public places. Turkey is one such country, and legislation banning smoking in all indoor public places, including cafes and restaurants, was introduced on 19 July 2009.

A number of studies have investigated the impact of smoke-free legislation and have reported a reduction in the rate of hospital admissions for acute cardiovascular diseases in the general population after enforcement of smoking bans in indoor public places. There is still uncertainty, however, about the magnitude of this reduction, with estimates ranging from 0% to 70% (*7–12*). Few studies have examined the impact of smoking legislation on respiratory outcomes (*13–17*).

The aim of the study was to evaluate admissions to emergency departments for smoking-related diseases prior to and following the introduction of smoke-free legislation in Kocaeli city in the north-west of Turkey.

Methods

Study design and setting

The number of patients visiting emergency departments with a smoking-related disease was evaluated retrospectively over 6-month periods before and after the implementation of smoke-free legislation on 19 July 2009. Data obtained for the period January to June 2009 were compared with data from January to June 2010. Emergency department admission records were examined in 13 hospitals in the city. Kocaeli city consists of 12 districts, 7 of which contain 1 or 2 state hospitals (total 10 state hospitals). We included all state hospitals, including Kocaeli University Hospital, and 3 private hospitals located in Kocaeli city centre.

Diseases recorded

We collected data on asthma, chronic obstructive pulmonary disease (COPD) and myocardial infarction because previous studies investigating the effects of smoking bans on emergency admissions have generally included these. We also extended the spectrum of diseases to investigate nasopharyngitis, rhinitis, bronchitis and lower respiratory tract infections (LRTIs). We hypothesized that, although the evidence of a relationship of these other respiratory conditions with tobacco consumption has not been clearly determined, smoking might have an important role in aggravation of these diseases. We therefore recorded admissions diagnosed under the *International Classification of Diseases (ICD)* codes for bronchitis (J.20), LRTI/pneumonia (J.22/J.18), allergic rhinitis (J.30), asthma (J.45), COPD (J.44) and myocardial infarction (I.21).

Statistical methods

We tested the hypothesis that the implementation of the anti-smoking law was associated with changes in the total number of emergency department admissions for smoking-related diseases in the 6 months from January to June. We compared the number of admissions during the 6 months after the law had come into effect (2010) with the average number of admissions during the same 6 months in the year prior to the law being passed (2009). Also the time-series design and analysis of the slopes of the 2 trendlines were performed for each disease. The forecasting equation for the linear trend model was: $Y(t) = a + \beta(t)$, where t is the time index. The parameters a and β (the intercept and slope of the trendline) are usually estimated via a simple regression in which Y is the dependent variable and the time index t is the independent variable. The trend analysis was performed for both years. Student t-test was used to compare the slopes of the 2 trendlines. A P-value < 0.05 was considered statistically significant.

Results

The total number of emergency department admissions for smoking-related diseases was 83 089 over the period January–June 2009 and 64 314 over January–June 2010. This represented a total reduction of 22.6% (Figure 1). There was a progressive decrease in the monthly number of emergency department admissions for smoking-related diseases between January and June 2009 and this continued to fall over January to June 2010 after smoke-free legislation (Figure 2).

The annual numbers of emergency department admissions for the different smoking-related diseases before and after the smoke-free legislation are shown in Figure 1. The decrease was most marked for bronchitis. The number of patients who were admitted to the emergency department with the diagnosis of chronic bronchitis was 44 141 for the 6-month period in 2009 and this number decreased to 26 558 over the same 6-month period in 2010, a reduction of 39.8%. Comparisons of the slopes of the 2 trendlines of each disease are shown in Table 1. There was a statistically significant decrease in admissions for

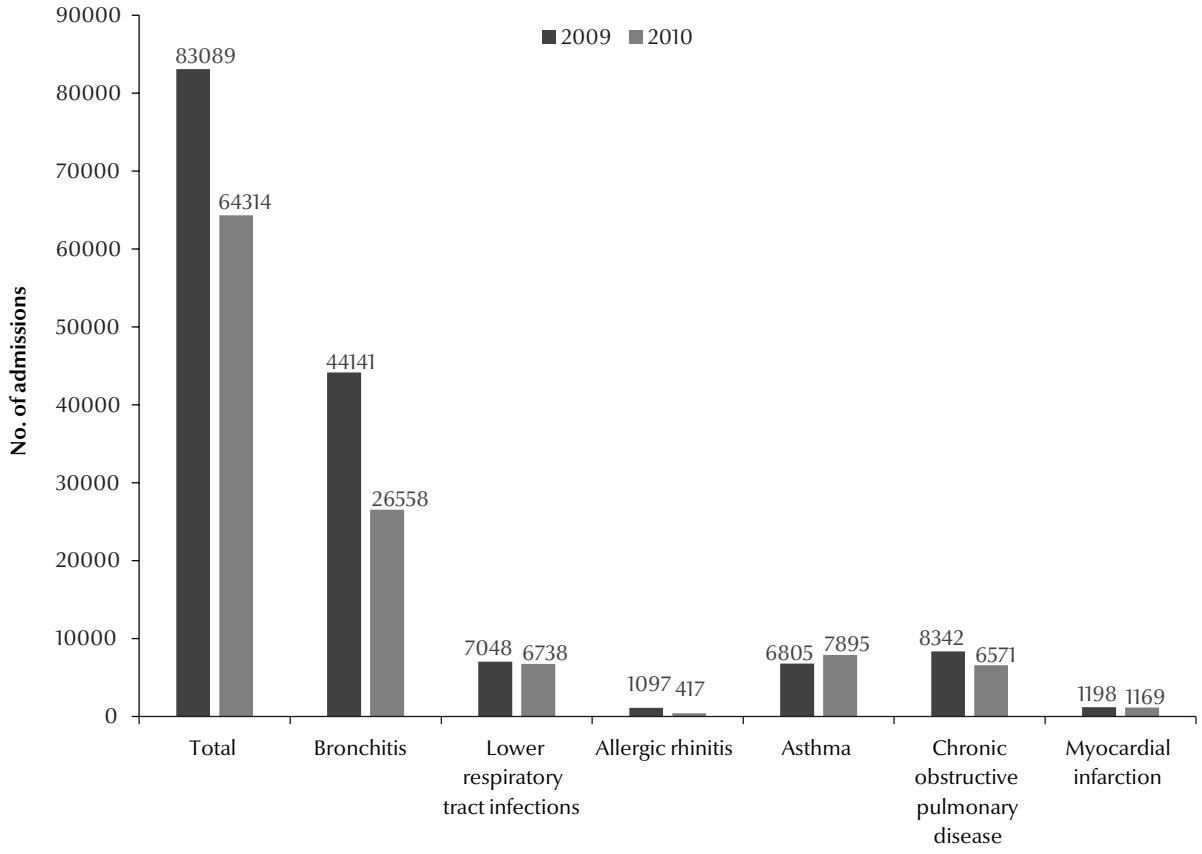

Figure 1 Annual number of emergency department admissions for the different smoking-related diseases before and after smoke-free legislation

bronchitis according to time-series analysis ($P < 0.05$) (Figure 3).

There was also a significant difference in the number of admissions for LRTIs after the legislation (Figure 1) and the trend analysis showed that this was significant ($P < 0.01$) (Table 1) (Figure 4). Although the monthly trend analysis showed a sharp peak in LRTIs in May, the decrease in admissions in the first 4 months of 2010 may be responsible for the significant results in trend analysis.

There was a large decrease in the numbers of patients admitted to emergency departments with COPD after the smoking legislation was introduced than before (8342 versus 6571) and a smaller decrease in admissions for myocardial infarction (1198 versus 1169) (Figure 1). These decreases, however, were not statistically significant for COPD (Figure 5) or for myocardial infarction according to the trend analysis results ($P > 0.05$) (Table 1).

Admissions for allergic rhinitis decreased from 1097 to 417 (Figure 1). There was a 61.9% reduction in emergency admissions for allergic rhinitis in the first 6 months of 2009 and 2010 and although there was a peak in April in 2009 this peak was not observed in 2010. According to the 2 trend analysis

Table 1 Analysis of the difference in the slopes of the trendlines for admissions for different smoking-related diseases in Kocaeli in 6-months periods before (2009) and after (2010) smoke-free legislation in Turkey

Disease	Trendline equation		*t*-value	*P*-value
	2009	2010		
Bronchitis	10 917 – 1 017(*t*)	5432 – 287(*t*)	–2.58	< 0.05
Lower respiratory tract infection	1360 – 53.0(*t*)	659 + 133(*t*)	–3.94	< 0.01
Allergic rhinitis	139 + 12.6(*t*)	68.6 + 0.26(*t*)	0.31	> 0.05
Asthma	1301 – 47.6(*t*)	1389 – 21.0(*t*)	–1.30	> 0.05
Chronic obstructive pulmonary disease	1791 – 114(*t*)	1368 – 78.0(*t*)	–1.24	> 0.05
Myocardial infarction	209 – 2.69(*t*)	175 + 5.74(*t*)	–1.12	> 0.05

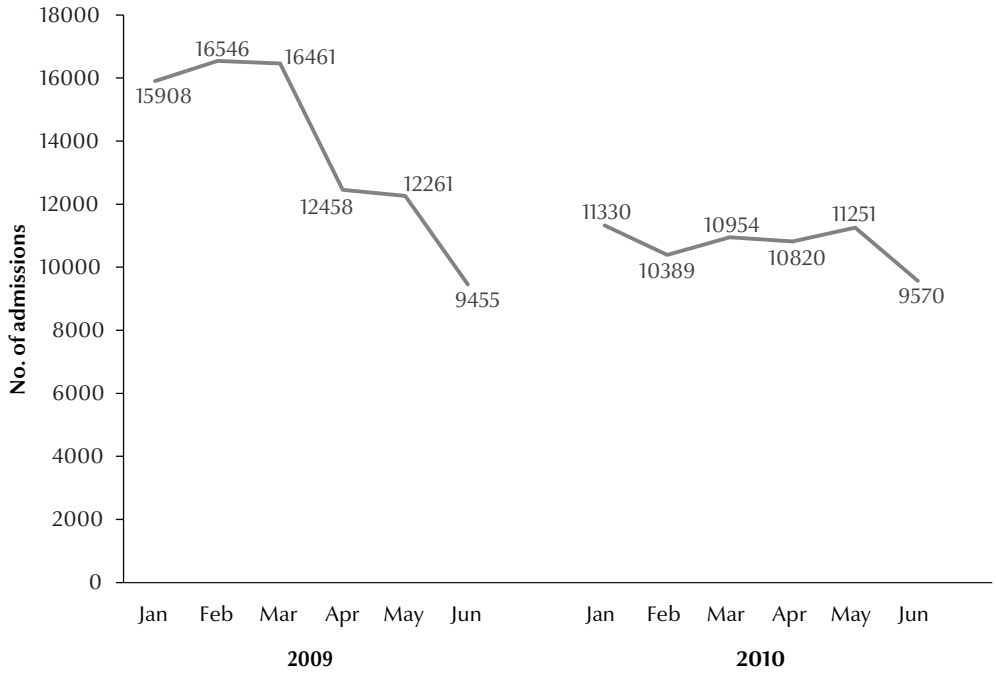

Figure 2 **Monthly numbers of emergency department admissions for all smoking-related diseases in Kocaeli before and after smoke-free legislation**

results the decrease in the number of admissions for allergic rhinitis was not statistically significant ($P > 0.05$). The number of emergency department admissions for asthma increased from 6805 to 7895 but the increase was not statistically significant ($P > 0.05$).

Discussion

The total number of admissions to emergency departments in Kocaeli for smoking-related diseases decreased after the implementation of smoke-free legislation in Turkey. The time-series analysis of the study showed a significant decrease in respiratory diseases such as bronchitis and LRTIs and non-significant reductions in the number of admissions for COPD, allergic rhinitis and myocardial infarction. In contrast, emergency admissions for asthma in-

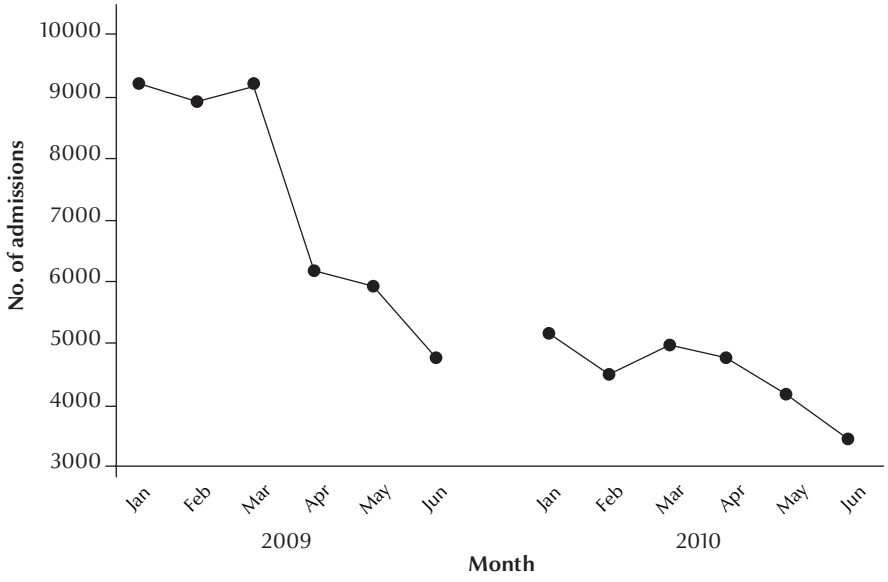

Figure 3 **Slopes of the 2 trendlines for emergency department admissions for bronchitis before (2009) and after smoke-free legislation (2010)**

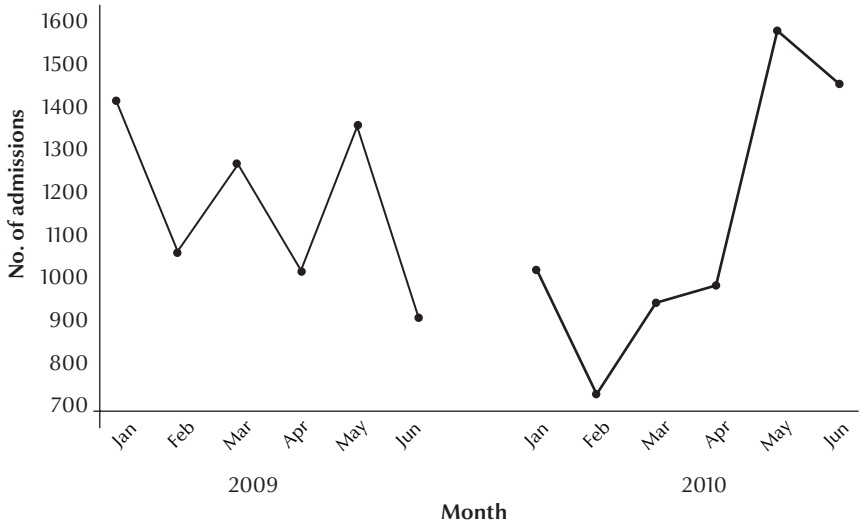

Figure 4 Slopes of the 2 trendlines for emergency department admissions for lower respiratory tract infection before (2009) and after (2010) smoke-free legislation

creased, but not significantly so, after the smoking ban.

The impact of smoke-free legislation on rates of hospital admissions for acute coronary syndromes has been investigated in various studies worldwide (*7–12*). A growing number of studies have shown evidence of reductions in admissions to hospital for acute myocardial infarction following the introduction of smoke-free legislation. Hospital admission rates for acute myocardial infarction were reduced by 8% as a result of a comprehensive smoking ban in New York State in the United States of America (*7*). Barone-Adesi et al. also observed a decrease in hospital admissions for acute myocardial infarction among men and women aged under 60 years in north Italy and suggested that smoke-free policies might result in a short-term reduction in admissions for acute myocardial infarction (*12*). It was also noted in the present study that the number of myocardial infarction cases was lower after the smoking ban but the difference was not statistically significant. It is suggested that the relatively lower number of cases diagnosed with myocardial infarction in this study might be the reason for the statistically non-significant result.

Nevertheless, to the best of our knowledge, there are few studies that have evaluated the impact of smoking legislation on respiratory outcomes (*13–17*). Such studies have chiefly been concerned with asthma. Second-hand tobacco smoke is a well-documented environmental trigger for the development of asthma symptoms among adults (*18*). Kent et al. reported that the implementation of a nationwide workplace smoking ban was associated with a decline in admissions for acute pulmonary disease among specific age groups and with an overall reduction in asthma admissions (*13*). Rayens et al. reported that emergency department visits for asthma declined 22% before and after introduction of the law (*14*). Moreover, a statistically significant reduction in hospital admissions was seen for asthma in another study (*15*).

On the other hand, Dove et al. were unable to find an association between smoke-free laws and self-reported current asthma. However, the smoking ban was associated with lower odds of ever having asthma with current symptoms, asthma attacks and emergency department visits for asthma, although these results were not statistically significant (*16*). In the present study, the number of people admitted to emergency departments with asthma increased from 6805 to 7895. Since several factors besides smoke exposure may be responsible for worsening of asthma—such as medications, exercise, air pollution, allergens and respiratory tract infections—the increased number of asthma attacks after smoking legislation suggests that other aggravating factors might affect this result. We included data from the same periods in 2 consecutive years in order to avoid seasonal variations; therefore, seasonal allergen exposure is unlikely to be responsible for the increased cases of asthma attacks. However, it is known that H1N1 virus influenza cases were prevalent between the dates of January to June 2010 in Turkey. We suggest that asthma exacerbations triggered by this viral infection may explain the increased number of cases.

Naiman et al. evaluated 3 respiratory conditions (asthma, COPD and bronchitis or pneumonia) in their study. There was a 13.5% overall reduction in hospital admissions for respiratory conditions (*17*). The present study found that there was a 22.5% reduction in total emergency department admissions for smoking-related diseases. This finding was virtually identical to that of Dagli et al., in a study which evaluated tobacco-related diseases emergency department admissions in Istanbul in Turkey and reported an overall reduction rate of

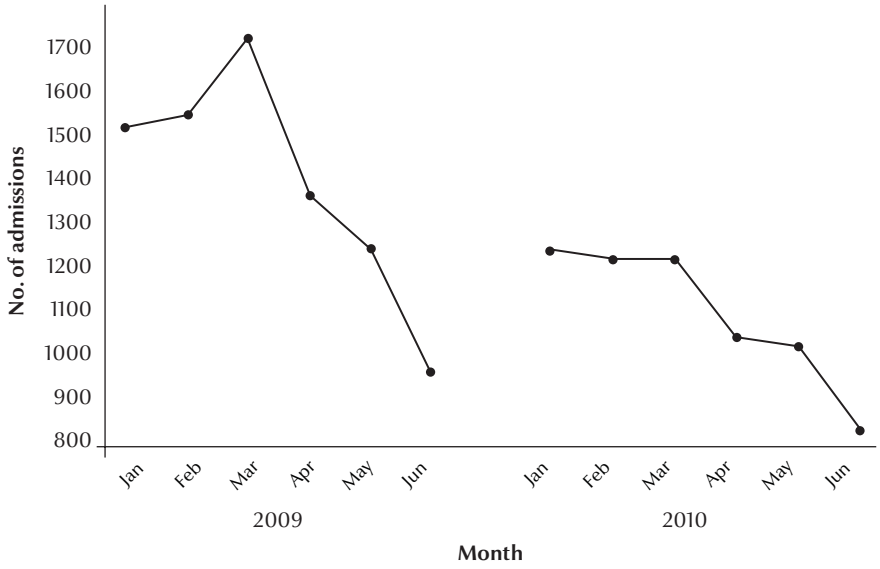

Figure 5 Slopes of the 2 trendlines for emergency department admissions for chronic obstructive pulmonary disease (COPD) before (2009) and after (2010) smoke-free legislation

24.2% for emergency admissions for tobacco-related diseases and reductions of 21.4% and 59.2% respectively for COPD and allergic rhinitis (*19*). Similarly, the reduction in the total numbers of admissions for bronchitis, COPD and allergic rhinitis were 39.8%, 21.2% and 61.9% respectively in our study. However, time-series analysis showed that the decreases were statistically significant only for cases of bronchitis and LRTI. This might be related to the relatively lower number of cases of COPD and allergic rhinitis in the study compared with bronchitis and LRTIs. Although it was not statistically significant, there was a trend of decrease in both COPD and allergic rhinitis admissions after the smoking ban. Furthermore, time-trend slopes of COPD and allergic rhinitis had significant peaks, which were interpreted as increased numbers of admissions in certain months, while these peaks were not observed in the time-trend slopes after the smoking ban.

Some limitations of the study can be noted. We believe that other factors such as implementation of family-medicine-based primary care in Turkey, decline in smoking prevalence, reductions in daily cigarette consumption among smokers and an increased public health focus on smoking cessation may also have affected rates of admission to hospital by reducing smoking behaviour and episodes of smoking-related diseases. However, these confounding factors are also related to the smoking legislation and together these data emphasize the importance of the implementation of smoke-free laws. Since no data were collected before 2009, and this study did not include the total numbers of emergency admissions other than smoking-induced diseases, we could not clearly interpret the trend in emergency admissions.

The data about the emergency department admissions were received from the Directorate of Health in Kocaeli. Since our data did not include demographic characteristics, we could not discuss the results according to age and sex and smoking habits. Although the primary aim of smoking bans is to decrease exposure to second-hand smoke for non-smokers, such bans may also have an impact on active smoking. The weakness of this study was the inability to assess the effect of altered smoking prevalence on hospital admissions given the causal relation between active smoking and tobacco-related disease.

Conclusions

The number of admissions to emergency departments for smoking-related respiratory diseases and myocardial infarction decreased after the implementation of smoke-free legislation. The strength of association of smoke-free legislation with certain tobacco-related diseases may be weak; however, since there was an overall reduction in emergency admissions for respiratory diseases, we suggest that the smoking ban may be linked to the significant decline in hospital admissions for respiratory diseases in the short-term. The long-term effects of smoke-free legislation on tobacco-related diseases and smoking prevalence should be evaluated in future long-term prospective studies in order to emphasize the importance of smoke-free environment and to motivate the authorities to implement stronger smoke-free laws.

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Overall adequacy of antenatal care in Oman: secondary analysis of national reproductive health survey data, 2008

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كفاية الرعاية العامة السابقة للولادة في عُمان: تحليل ثانوي لبيانات المسح الوطني للصحة الإنجابية، 2008

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الخلاصة: على الرغم من الحالة الصحية الجيدة للنساء والأطفال في عُمان، لاتزال هناك بعض الثغرات التي ينبغي سدُّها. فقد استطلعت هذه الدراسة مدى كفاية استخدام النساء العمانيات اللواتي سبق لهن الزواج للرعاية السابقة للولادة، والمحدِّدات الاجتماعية الديموغرافية ومحدِّدات الخدمات الصحية التي تحول دون الحصول على رعاية سابقة للولادة وافية وكافية. ففي تحليل ثانوي لمجموعة بيانات وطنية (العدد = 1852 امرأة) كانت النسب المئوية للنساء اللواتي لديهن أكثر من 4 زيارات للرعاية السابقة للولادة، واللواتي حضرن إلى الرعاية السابقة للولادة في الثلث الأول من الحمل، واللواتي تلقَّين رعاية من قِبَل موظفين مدرَّبين 96.8٪ و74.9٪ و99.1٪ على التوالي. وكانت كفاية الرعاية السابقة للولادة تستخدم لدى النساء اللواتي شملهن المسح هي 53.8٪. وبعد تصحيح تأثير المتغيرات المشاركة الأخرى، كان الحمل بالطفل الأول المنبئَ الهامَّ الوحيد بكفاية الرعاية السابقة للولادة بشكل عام (OR 2.2; 95% CI: 1.6–3.2). وخلص الباحثون إلى أن هناك حاجة إلى زيادة وعي الأمهات اللواتي لديهن أكثر من طفل بضرورة الرعاية الكافية السابقة للولادة.

ABSTRACT Despite the good health status of women and children in Oman, there are still some gaps to be filled. This study explored the adequacy of antenatal care (ANC) utilization of Omani ever-married women and the sociodemographic and health service determinants of adequate and sufficient ANC. In a secondary analysis of a national dataset (*N* = 1852 women), the percentages of women who had 4+ ANC visits, attended ANC in the 1st trimester and received care by trained personnel were 96.8%, 74.9% and 99.1% respectively. Overall adequacy of ANC (use and sufficiency of recommended basic services) for the surveyed women was 53.8%. After adjustment of other covariates, being pregnant with the 1st baby was the only significant predictor of overall adequacy of ANC (OR 2.2; 95% CI: 1.6–3.2). Greater awareness of the need for adequate ANC is required for mothers with more than one baby.

Adéquation globale des soins prénatals à Oman : analyse secondaire des données d'une enquête nationale sur la santé génésique, 2008

RÉSUMÉ Malgré la bonne santé des femmes et des enfants à Oman, il reste des lacunes à combler. La présente étude a exploré l'adéquation du recours aux soins prénatals par des femmes ayant été mariées à Oman et les déterminants sociodémographiques et des services de santé en termes de soins prénatals adéquats et suffisants. Dans une analyse secondaire d'un ensemble de données national (*N* = 1852 femmes), les pourcentages de femmes ayant bénéficié d'au moins quatre visites de soins prénatals, ayant reçu des soins prénatals au cours du premier trimestre de grossesse ou ayant été prises en charge par du personnel qualifié étaient de 96,8 %, 74,9 % et 99,1 %, respectivement. L'adéquation globale des soins prénatals (accessibilité et suffisance des services de base) était de 53,8 % selon les femmes interrogées. Après ajustement des autres covariables, être enceinte de son premier enfant était le seul facteur prédictif important de l'adéquation globale des soins prénatals (OR 2,2 ; IC à 95 % : 1,6–3,2). Une sensibilisation accrue au besoin de soins prénatals adéquats est requise pour les femmes ayant plus d'un enfant.

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Introduction

In its *Health development report* of 2010 the United Nations Children's Fund reported that during the period 1970–2010 Oman was the most improved country among 135 countries (*1*). These substantial improvements are attributed mainly to the country's rapid socioeconomic development and to the health plans of the Ministry of Health (MoH). In 1987 the MoH introduced maternal and child health services into primary health care (PHC) (*2*) and since 2001 has adopted a number of strategies to reduce morbidity and mortality (*3*). According to the Oman *Annual health report* for 2012, the average number of antenatal care (ANC) visits for registered pregnant women was 6 (*2*). ANC coverage for at least 1 visit has increased to 99.4%, while 4 or more visits reached 80.4% in 2012 and booking during the 1st trimester reached 66.5% (*2*). However, regional variations in the proportions of ANC coverage (Muscat, North Batinah and Alburaymi) and those registered in the 1st trimester (Dhofar) have been observed.

Despite the good health status of women in Oman, there is still room for improvement according to the National Health Survey in 2000 (*4*) and the Reproductive Health Survey (RHS) in 2008 (*5*). The RHS reported low use of birth spacing methods, particularly modern methods, and greater use of traditional methods compared with the National Health Survey. Moreover, women's lack of awareness of the complications of pregnancy was noted. By 2012 gaps were still observed; national statistics highlighted an increasing rate of low birth weight from 4.1% in 1980 to 9.5% in 2012 (*2*). The abortion ratio per 1000 live births has been fluctuating, with a slow decrease from 150 in 1995 to 134 in 2012. Moreover, the proportion of caesarean sections out of all deliveries undertaken in health facilities increased from 5.1% in 1990 to 17.5% in 2012, while the emergency/elective caesarean section ratio decreased from about 6 to only 3.5. Although anaemia among pregnant women decreased from 42.8% in 2000 (*4*) to 26.7% in 2012, the rate is still high (*2*). In addition, other forms of morbidity associated with pregnancy have increased, e.g. diabetes to reach 4.8% and hypertension 1.1%.

Studying the predictors of ANC utilization can help to ensure adequate use of high-quality ANC and further reduction of maternal and child morbidity and mortality. Several studies have found that mothers' sociodemographic factors affect the adequacy of ANC utilization (*6–8*). A systematic review in developing countries (including only one Arab country) noted that adequacy of ANC utilization cannot be achieved merely by establishing health centres; women's overall social, political and economic status needs to be considered (*9*). For better evaluation of the adequacy of ANC, valid indicators are needed. Unfortunately, there is no consensus on the parameters to use for evaluation of the adequacy of ANC use. Most commonly studies include the number of ANC visits (4+) and timing of first ANC visit (1st trimester) (*6–8,10*). However, in addition to these, core services performed at least once during pregnancy (*8*), the provider of ANC and the place of delivery have been included into the process of evaluation (*11*).

As far as we know, no research has been conducted in Oman to study the adequacy of ANC utilization and its predictors in order to help policymakers in the MoH to adapt their policies and strategies regarding maternal health services. A good opportunity was to utilize data obtained from the 2008 RHS, the most recent community survey conducted in Oman to study these predictors. The aims of this study were to explore the adequacy of ANC using the dataset of the RHS and to determine the sociodemographic characteristics of Omani ever-married women (15–49 years)and health service factors associated with adequacy of ANC utilization.

Methods

Study design

This study was a secondary, in-depth analysis of data extracted from the national RHS in Oman, which was a cross-sectional national household survey conducted in the first half of 2008 (*5*). This survey was a part of the Oman segment of the World Health Survey, which was developed by the World Health Organization to obtain comprehensive information on the health of populations using standardized methodology.

Population and sampling

A probability, multistage, stratified cluster sampling was used in the national household survey to select 5000 families from all regions/governorates. The sample was stratified by urban/rural residence with equal proportions across the regions. All eligible, ever-married women aged 15–49 years from each selected household were interviewed at home. Out of 3944 eligible women interviewed, records of Omani women having children less than 3 years old (N = 1852) were selected for this secondary data analysis. Details of the study methodology have been published in detail elsewhere (*12*).

Data collection

Data were obtained through household interviews using a structured questionnaire and included sociodemographic variables such as women's age, place of residence, educational level, economic status and work status; health service factors such as access time to health facilities (time spent to reach the health facility), type of services (government or private) and patient satisfaction with health services; and ANC variables (outcome variables): number of ANC visits, timing of 1st ANC visit, ANC

provider and ANC contents (blood pressure measured, blood and urine samples taken, having ultrasonography scan and being told about signs of pregnancy complications).

Definitions

In this secondary analysis, adequate use of ANC was defined according to Abd El Hamid et al. (*11*) (with some modifications) using 3 indicators: adequate number of ANC visits (at least 4 ANC visits), early ANC use (1st ANC booking during 1st trimester) and ANC provided by skilled provider (doctor or nurse/midwife). Sufficiency of ANC was considered if all ANC contents were performed at least once during pregnancy. The score of overall adequacy of ANC was composed of 8 items: adequate ANC visits, early ANC use, ANC provided by a skilled provider, blood pressure measured, blood sample taken, urine sample taken, ultrasound performed and told about complications of pregnancy. So if a woman scored 8, she was classified as having adequate overall adequacy of ANC, if < 8 she was classified as having inadequate overall adequacy of ANC (*13*).

Ethical considerations

The Ministry of Health's research and ethics review and approval committee approved the proposal for secondary analysis of data of the RHS. The anonymity of the participants was preserved as they were not identified from the saved data records.

Data management

Data were entered to the computer using the *CSPro* and were cleaned using 2 syntax programs (*CSPro* and *Stata*). Sample weights were used to ensure the representativeness of the population. Analysis was done using the statistical package *SPSS*, version 18. Chi-squared tests and odds ratio calculations were used to test the associations between independent variables of interest (sociodemographic and health service factors) and the dependent variables (adequate use of ANC, sufficiency of ANC and overall adequacy of ANC). Logistic regression and adjusted odds ratios (OR) with 95% confidence interval (CI) were used to identify the significant predictors independently.

Results

Sociodemographic characteristics of women

According to Table 1, 56.8% of surveyed women were in the age group 25–34 years old and 71.5% were from urban areas. One-fifth of women (21.6%) were pregnant with their 1st-order baby and 37.1% with their 5th or higher order baby in the 3 years preceding the survey. Approximately half of the sample (49.0%) had not completed secondary education and 15.8% and 20.4% were from the low and the lower-middle socioeconomic classes respectively; the majority of surveyed women (80.8%) had never worked. The majority of women were using public health facilities (71.9%) and were satisfied with the provided services (91.4%); 88.0% of them reported that the access time to health facility was 30 minutes or less. There was a discrepancy between urban and rural areas regarding the ANC provider; while in urban areas 74.6% of women received ANC by a doctor, in rural areas it was 59.7% (data not shown).

Predictors of components of adequate use of ANC

Table 1 also shows that the total percentages of women who had an adequate number of ANC visits and attended ANC early were 96.8% and 74.9% respectively. Almost all surveyed women (99.1%) received ANC from a skilled provider. The percentages of women who had an adequate number of ANC visits and attended ANC early were significantly higher with the 1st baby compared with the 2nd or higher-order babies ($P = 0.045$ and < 0.001 respectively). Women aged < 25 years reported significantly higher rates of early ANC attendance compared with older women ($P = 0.001$). Other sociodemographic factors did not affect the adequate number of ANC visits or early ANC use. In addition, women's age did not affect the adequate number of ANC visits. Being in a high socioeconomic class was the only significant factor associated with receiving ANC from a skilled provider ($P = 0.017$).

With regard to content of ANC visits, almost all of the surveyed women recalled that blood pressure was measured, and blood and urine samples were taken (> 99%) and ultrasonography was done (> 95%). However, fewer surveyed women (72.2%) reported that they had been counselled about the danger signs of pregnancy.

Predictors of adequacy, sufficiency and overall adequacy of ANC utilization

The percentages of women who had adequate use of ANC (including adequate number of ANC visits, early use of ANC and ANC provided by skilled provider) and sufficiency of ANC (including performing all ANC contents) were 73.4% and 71.7% respectively. The overall adequacy of ANC (including both adequate use and sufficiency of ANC) in the surveyed women was 53.8% (Table 2). Women aged < 25 years (81.1%, $P < 0.001$) and those with 1st-order baby (84.4%, $P < 0.001$) were more likely to have adequate use of ANC (Table 2). Regarding sufficiency of ANC, women aged < 25 years (79.9%), having their 1st baby (80.1%) and those who were satisfied with the ANC service (75.1%) were more likely to have sufficiency of ANC components ($P < 0.001$, < 0.001 and 0.013 respectively). Table 2 also shows that the overall adequacy of ANC use was significantly affected by being < 25 years old (65.6%) ($P < 0.001$), having 1st baby (68.5%) ($P < 0.001$) and being

Table 1 Distribution of surveyed women by sociodemographic and health service factors and percentages positive for indicators of antenatal care (ANC) utilization

Variable	All women (unweighted)		Adequate number of ANC visits[a,d]	Early use of ANC[b,d]	Skilled provider of ANC[c,d]
	No.	%	%	%	%
Woman's age (years)					
< 25	430	17.2	98.0	83.5***	98.3
25–34	1175	56.8	96.7	74.1	99.0
35+	547	26.0	96.3	70.7	99.6
Birth order					
1	468	21.6	98.7*	85.9***	98.8
2–4	868	41.3	97.5	75.2	98.4
5+	816	37.1	95.5	69.6	99.6
Place of residence					
Urban	1123	71.5	96.7	75.7	99.0
Rural	1029	28.5	97.0	72.6	99.3
Educational level					
Illiterate	350	9.5	94.6	67.7	97.0
Literate/primary/ preparatory	936	39.5	96.8	74.2	99.3
Secondary	635	34.7	97.4	77.5	99.0
University+	231	16.3	96.9	75.0	99.8
Economic status					
Low	373	15.8	96.2	76.6	98.0*
Lower middle	483	20.4	98.8	71.6	99.1
Upper middle	556	29.0	96.2	74.9	98.6
High	624	34.8	97.0	75.9	99.8
Work status [e]					
Currently work	63	12.6	99.2	78.7	98.8
Previously worked	26	6.6	100.0	87.0	100.0
Never worked	503	80.8	97.5	74.8	99.5
Type of health facility [e]					
Private	92	28.1	100.0	72.2	61.4
Public	293	71.9	97.0	76.3	70.7
Access time to health facility (min) [e]					
≤ 30	307	88.2	97.5	74.4	67.1
> 30	61	11.8	100.0	79.5	68.4
Satisfaction with outpatient care					
Not satisfied	33	8.6	92.2	61.5	76.7
Satisfied	352	91.4	98.4	76.4	67.3
Total [f]	2152	100.0	96.8	74.9	99.1

*[a]Adequate number of ANC visits = 4+ ANC visits; [b]Early use of ANC = 1st antenatal visit in 1st trimester; [c]Skilled provider of ANC = care received from doctor or nurse/midwife. [d]Row percentages; [e]Only those who attended health facilities during the previous 12 months; [f]Totals not always the same due to missing data in some variables. *P < 0.05; ***P < 0.001.*

satisfied with the ANC service (60.8%) ($P = 0.007$).

Table 3 shows the final logistic regression model for selected predictor factors associated with adequate use, sufficiency and overall adequacy of ANC. Birth order [1st-order baby (OR 2.7; 95% CI: 1.7–4.1; $P < 0.001$) or having 2nd- to 4th-order baby (OR 1.5; 95% CI: 1.1–2.0; $P = 0.015$)] were the only significant predictors for adequate use of ANC. Also, birth order, particularly having 1st baby was the only significant predictor for overall adequacy of ANC (OR 2.2; 95% CI: 1.6–3.2; $P <$

0.001). However, in addition to having 1st baby (OR 1.8; 95% CI: 1.2–2.7; P = 0.006), being from low or lower-middle socioeconomic class (OR 1.3; 95% CI: 1.1–1.6; P = 0.019) were significant predictors for sufficiency of ANC.

Discussion

This secondary analysis revealed that the percentage of women having an adequate number of ANC visits in Oman was comparable to or higher than some other countries of the Gulf Co-operation Council and higher than other countries in the Eastern Mediterranean Region. Being pregnant with the 1st baby was the only significant predictor for adequate use of ANC, sufficiency of ANC and overall adequacy of ANC visit (including both adequate use of ANC *and* sufficiency of ANC). This survey showed that almost all of the studied women had 4 or more ANC visits (96.8%), and this was higher than percentages reported in the Oman *Annual health report* during the period between 2008 and 2012 (80.4–89.2%) (*2*). This discrepancy between the *Annual health report* and our results may be because the survey was more comprehensive in terms of including mothers who received ANC in MoH health facilities in addition to those using other government and private services. The antenatal coverage in this survey was comparable with that in Bahrain (100% during the period 2005–12), but was higher than in Qatar (85% during the period 2005–12) (*14*). This percentage was also much higher than that reported in some Middle East countries: 69% in Tunisia, 58.1% in Syrian Arab Republic, 48.4% in Algeria, 44.5% in Morocco and 29.3% in Yemen (*11*).

Three-quarters of women in this survey made ANC visits in the 1st trimester and this proportion was comparable to those of some countries in the Pan Arab Family Health Survey such as the Syrian Arab Republic (78.6%), Algeria (74.8%) and Morocco (79.1%). However, it was lower than others such as Tunisia (86.6%) (*11*). One-quarter of the women had late 1st antenatal visits and consequently might be at risk of having babies with neural-tube defects due to the lack of early intake of folic acid. Lack of awareness of the importance of early ANC might be the cause of late antenatal 1st visits.

Counselling about the danger signs of pregnancy was reported by approximately three-quarters of the sample and this was higher than in other studies, such as in Tanzania, where fewer than half of the pregnancy danger signs were recalled by clients (*15*). Lower rates of counselling compared with other aspects of ANC may be due to lack of communication skills by some healthcare providers or to overloaded clinics.

The effect of mother's age on adequacy of number of ANC visits is inconsistent across the literature. A study in Bangladesh found that lower age was a determinant for adequate number of ANC visits (*16*), while in another study, in India, higher age of mothers was associated with adequate number of ANC visits (*17*). In our study, as in other studies from certain parts of India and Egypt (*18,19*), the mother's age was not a determining factor for adequate number of ANC visits.

Lower age of the mother was a determining factor for early ANC use. Similarly, Bashour et al. in the Syrian Arab Republic found that mothers being younger (< 20 years old) correlated with early attendance at ANC (*6*). In contrast, age was not a significant factor for early ANC attendance in Myanmar in south-east Asia, perhaps because a narrower age range was studied (15–24 years old) (*20*).

In our survey, a significant association was found between being pregnant with the 1st baby and having an adequate number of ANC visits or early use of ANC. These associations were also observed in studies from Egypt, Syrian Arab Republic, Kenya and India (*6,19,21,22*). Other sociodemographic factors in our study, such as mother's education, socioeconomic status, residence and work status were not associated with adequate number of ANC visits and early use of ANC. In contrast, other studies found a positive association between these factors and adequate number of ANC visits and early use of ANC (*6,19,21,22*). The discrepancy between our study and others could be due to the high commitment by the government of Oman to explicitly implement the Health for All strategy through PHC in its 6th 5-year plan. The Government has not only declared that health is a fundamental right but has also provided public health services free of charge and given priority to construction of a basic health infrastructure that would be universally accessible to the whole population (*3,23*).

Using a single indicator—i.e. number of ANC visits *or* the timing of ANC visits *or* providing of ANC by skilled provider *or* content of ANC (sufficiency)—reflect only certain aspects of ANC. Although use of a single indicator can help to identify specific gaps in care, it may overestimate ANC utilization. In the present study, the percentages of women who reported positive for a single indicator were 96.8% for adequate number of ANC visits, 74.9% for early ANC use, 99.1% for ANC by skilled provider and 71.7% for sufficiency of ANC. Similarly, Trinh et al. in certain areas of Viet Nam found that using a single indicator—i.e. any use of ANC *or* duration of pregnancy at entry to ANC *or* number of ANC visits—gave overestimates of ANC use compared with overall adequacy when multiple aspects of ANC utilization indicators were combined (*13*).

In contrast, using a combination of factors—i.e. adequate use of ANC (number of ANC visits, timing of ANC visits *and* providing ANC by skilled provider) or overall adequacy of ANC

Table 2 Distribution of surveyed women according to antenatal care (ANC) utilization (adequacy and sufficiency) by sociodemographic and health service factors

Variable	All women (weighted)	Adequate use of ANC[a,d]	Sufficiency of ANC[b,d]	Overall adequacy of ANC[c,d]
	No.	%	%	%
Woman's age (years) (n = 1851)				
< 25	318	81.1***	79.9***	65.6***
25–34	1051	72.8	68.7	50.9
35+	482	69.5	72.7	52.2
Birth order (n = 1852)				
1	400	84.4***	80.1***	68.5***
2–4	575	74.0	69.4	51.3
5+	877	68.0	69.4	48.7
Place of residence (n = 1852)				
Urban	1323	74.4	71.9	54.6
Rural	529	70.8	71.3	51.8
Educational level (n = 1852)				
Illiterate	178	65.9	74.0	50.3
Literate/ primary/ preparatory	731	73.0	71.7	53.2
Secondary	642	75.3	73.7	57.0
University+	301	74.7	66.0	50.4
Economic status (n = 1762)				
Low	279	73.2	76.6	58.1
Lower middle	359	70.8	72.1	50.9
Upper middle	511	73.6	69.5	53.3
High	613	74.8	70.0	52.7
Work status (n = 461)				
Currently work	58	77.5	76.0	59.8
Previously worked	30	87.0	77.2	75.6
Never worked	373	73.6	72.0	56.2
Type of health facility[e] (n = 313)				
Private	88	72.2	75.6	56.4
Public	225	75.1	72.2	59.0
Access time to health facility (min)[e] (n = 305)				
≤ 30	269	73.4	73.9	58.7
> 30	36	79.5	68.6	53.6
Satisfaction with outpatient care[e] (n = 313)				
Not satisfied	27	61.5	52.9*	31.6**
Satisfied	286	75.5	75.1	60.8
Total	1852	73.4	71.7	53.8

[a]Adequate use of ANC = all 3 indicators present; [b]Sufficiency of ANC = all ANC contents performed; [c]Overall adequacy of ANC = sum of adequate use and sufficiency of service.
[d]Row percentages; [e]Only those who attended health facilities during the previous 12 months.
**P < 0.05; **P < 0.01; ***P < 0.001.*

(adequate use *and* sufficiency of ANC) reflects utilization of all recommended ANC services. In our study, the percentage of women who reported positive for adequate use of ANC were 73.4% and for overall adequacy was 53.8%. The overall adequacy of ANC use in our study was higher than that reported in the Syrian Arab Republic (27.7%), Tunisia (25.5%), Algeria (19%), Morocco (13%) and Yemen (5.2%) (*11*). Abd El Hamid et al.'s survey used indicators of adequate use in addition to delivery by skilled health-care providers, which is a natal and not an antenatal indicator. In our study, therefore, we used sufficiency (components of ANC visit) instead of delivery by skilled health-care

Table 3 Final multiple regression model of selected predictor factors associated with adequate use, sufficiency of service and overall adequacy of antenatal care (ANC)

Variable	Adequate use of ANC	Sufficiency of ANC service	Overall adequacy (adequacy & sufficiency of ANC)
	Adjusted OR (95% CI)	Adjusted OR (95% CI)	Adjusted OR (95% CI)
Woman's age (years)			
< 25	0.9 (0.6–1.5)	1.1 (0.7–1.8)	0.7 (0.5–1.0)*
25–34	0.8 (0.7–1.2)	0.7 (0.6–1.0)*	0.9 (0.6–1.4)
35+ (Ref.)	1	1	1
Birth order			
1	2.7 (1.7–4.1)***	1.8 (1.2–2.7)**	2.2 (1.6–3.2)***
2–4	1.5 (1.1–2.0)*	1.0 (0.7–1.3)	1.1 (0.8–1.4)
5+ (Ref.)	1	1	1
Place of residence			
Urban	0.8 (0.7–1.1)	0.9 (0.7–1.1)	0.9 (0.7–1.1)
Rural (Ref.)	1	1	1
Educational level			
Illiterate/ literate	1.2 (0.9–1.5)	1.1 (0.8–1.4)	1.1 (0.9–1.4)
Secondary+	1	1	1
Economic status			
Low/ lower middle	0.9 (0.8–1.2)	1.3 (1.1–1.6)*	1.1 (0.9–1.4)
Upper middle/ high (Ref.)	1	1	1

****P < 0.001; **P < 0.01; *P < 0.05.*
OR = odds ratio; CI = confidence interval.

providers in our calculation of overall adequacy (*11*).

In our study, we observed an association between lower birth order and both adequacy and overall adequacy of ANC and this was significant for the 1st baby. Similarly, other studies (albeit using different operational definitions of ANC adequacy) have shown that there was a negative association between parity or number of deliveries and adequacy of ANC (*7,24*). On the other hand, other studies found no relation between parity and adequacy of ANC (*25*). Inadequacy of ANC among high-parity women could be due to time management problems, negative attitudes resulting from previous pregnancies or knowledge and experience gained from previous pregnancies.

There were some limitations to this study. Some data were not covered in detail in the original RHS 2008 survey, such as health education provided, vaccination of mother, supplementation, and sex and language of ANC providers. Recall bias could be another limitation; however, we tried to reduce this bias by including records of Omani women having only children less than 3 years old in this analysis.

Conclusions and recommendations

In conclusion, a high rate of adequate number of ANC visits by mothers was observed in Oman. However, early use of ANC and counselling of danger signs of pregnancy need more attention in education and awareness programmes for women. Using more than one indicator to accurately reflect the overall adequacy of ANC utilization by women is preferable to using a single indicator. Being pregnant with the 1st baby was the only predictor of overall adequacy of ANC after adjusting the other confounding variables. Although the overall adequacy rate of ANC was higher than in other Eastern Mediterranean Region countries, more efforts are needed to increase this rate, especially for women with 2 or more babies. Identification of disadvantage groups in terms of poor quality of ANC utilization, and contributing factors, would be important to improve the quality of ANC use.

These findings will be of importance to policy-makers and programme managers. For example, a revision of the national strategy with introduction of the concept of multiple indicators (i.e. the overall adequacy of ANC) for evaluation of ANC can increase the effectiveness of the programme. Furthermore, health-care providers should target all women in educational intervention programme, regardless of educational or economic status, and emphasize early attendance at ANC and sufficiency of the content of ANC.

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Perinatal health care in a conflict-affected setting: evaluation of health-care services and newborn outcomes at a regional medical centre in Iraq

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الرعاية الصحية في الفترة المحيطة بالولادة في بيئة متأثرة بالنزاعات: تقييم خدمات الرعاية الصحية والنتائج المتعلقة بالولدان في أحد المراكز الطبية الإقليمية في العراق

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الخلاصة: تم إجراء تقييم ميداني لتقييم خدمات الرعاية الصحية للأمهات والولدان، وتقييم النتائج المتعلقة بالولدان وبالفترة المحيطة بالولادة، وما يصاحبها من عوامل الاختطار، في مستشفى بنت الهدى التعليمي للأمهات والولدان، وهو مستشفى إحالة كبير في جنوب العراق. وقد استخدَم الأسلوب المتعدد الطرائق مقابلاتٍ شبه منظمة، ومناقشات ومشاهدة الرعاية ومراجعة بيانات النتائج المتعلقة بالولدان وبالفترة المحيطة بالولادة. ويجرى تقييم محدود للعلامات الحيوية لدى الأمهات، ونمط الولادة، واستجابة الأجنة، والمضاعفات التي تحدث أثناء الحمل والولادة. وقد كان معدل وفيات الفترة المحيطة بالولادة هو 27.4 لكل 1000 ولادة و30.9 لكل 1000 مولود حي. وكانت العوامل المترافقة بوفيات الولدان هي: عمر الحمل أقل من 37 أسبوعاً، والجنس المذكر، ووزن الوليد أقل من 2.5 كغ، وعمر الأم أكثر من 35 سنة، وإقامة الأم في الريف، والولادة المهبلية. إن تحسين نتائج الولادة في جنوب العراق يتطلب دلائل إرشادية سريرية قائمة على الأدلة، ولوازم ومعدات إضافية، ومبادرات لتحسين الجودة، وتدريباً أثناء الخدمة.

ABSTRACT A field-based assessment was conducted to assess maternal and newborn health-care services, perinatal and newborn outcomes and associated risk factors at Bint Al-Huda Maternal and Newborn Teaching Hospital, a large referral hospital in southern Iraq. The multi-method approach used interviews, discussions, observation and review of perinatal and newborn outcome data. There is limited assessment of maternal vital signs, labour pattern, fetal response, and complications during pregnancy and labour. Perinatal and neonatal mortality rates are 27.4/1000 births and 30.9/1000 live births respectively. Associated neonatal mortality factors were gestational age < 37 weeks, male sex, birth weight < 2.5 kg, maternal age > 35 years, rural maternal residence and vaginal delivery. Improving birth outcomes in southern Iraq requires evidence-based clinical guidelines, additional supplies and equipment, quality improvement initiatives and in-service training.

Soins de santé périnatals dans un environnement de conflit : évaluation des services de soins de santé et des issues néonatales dans un centre médical régional en Iraq

RÉSUMÉ Une évaluation sur le terrain a été menée afin d'analyser les services de soins de santé pour la mère et le nouveau-né, les issues périnatales et néonatales et les facteurs de risque associés au centre hospitalier universitaire pour la mère et l'enfant Bint Al-Huda, un grand hôpital de recours dans le sud de l'Iraq. L'approche reposait sur de multiples méthodes et a eu recours à des entretiens semi-structurés avec des informateurs clés, à des petits groupes de discussion, à l'observation de la pratique des soins et à l'examen des données concernant l'issue des soins périnatals et néonatals. Les signes vitaux chez la mère, le déroulement du travail, la réponse foetale et les complications pendant la grossesse et le travail sont peu évalués. Les taux de mortalité périnatale et néonatale sont de 27,4/1000 naissances et de 30,9/1000 naissances vivantes respectivement ; les facteurs de mortalité néonatale associés étaient un âge gestationnel inférieur à 37 semaines, le sexe masculin, un poids de naissance inférieur à 2,5 kg, l'âge de la mère supérieur à 35 ans, un lieu de résidence rural, et un accouchement par voie basse. L'amélioration des issues néonatales dans le sud de l'Iraq passe par des recommandations cliniques fondées sur des bases factuelles, des fournitures et des équipements supplémentaires, des initiatives visant à améliorer la qualité et des formations en cours d'emploi.

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Introduction

Maternal and newborn health-care systems throughout the world have been severely disrupted by conflict and social unrest, and many of these systems share common needs and barriers to their development and recovery. The health-care system in Iraq—previously among the very best in the Middle East—has been severely weakened over the last couple of decades (*1*). For the last 2 decades, severe cuts in public health spending and years of conflict and occupation have left the health infrastructure of the country fragile and inadequate. The effects have been especially devastating for women and children, with routine immunizations reduced, pregnant women unable to reach hospitals for delivery and essential medical supplies limited (*2*,*3*). Southern Iraq has been particularly affected, with some of the worst maternal, newborn and child health indicators in Iraq and among surrounding countries (*4*).

However, with the hope for increasing peace and stability in Iraq, greater attention has been paid in recent years to improving the health of the Iraqi people. Many of the health needs in southern Iraq are addressed by the Bint Al-Huda Maternity and Child Teaching Hospital, located in Nasiriyah, the capital of the Dhi Qar Province. This is a large 300-bed tertiary referral hospital that provides maternal and newborn care to its catchment population of 2.5 million people. It is a very active teaching hospital with roughly 20 000–25 000 deliveries a year (or approximately 60–80 deliveries per day, many of which are surgical). Despite the high volume of births, a thorough understanding of maternal and newborn health-care needs is lacking and capabilities in the hospital are limited.

To elucidate these needs and capabilities, we conducted a field-based needs assessment of current maternal and newborn health-care services at Bint Al-Huda Maternity and Child Teaching Hospital. Furthermore, through extensive data collection, we evaluated perinatal and neonatal outcomes and associated risk factors among births at the hospital. Our ultimate goal was to provide local policy-makers and other stakeholders with informed, actionable recommendations for further improving maternal and newborn care. The assessment may also offer lessons regarding strengthening health systems in post-conflict settings throughout the world, including regional health systems and those in countries emerging from the so-called Arab Spring popular uprisings.

Methods

Study design and setting

In partnership with the Bint Al-Huda Maternity and Child Teaching Hospital, the Ministry of Health and the International Children's Heart Foundation, our clinician research team from Massachusetts General Hospital, Boston, United States of America conducted a field-based maternal and newborn health-care needs assessment among providers and administrators at Bint Al-Huda Hospital. In August 2013, our team travelled to Nasiriyah and conducted semi-structured key-informant interviews, small-group discussions and direct observation of maternal and newborn care. Participants included local clinicians and administrators. Verbal informed consent was obtained from all participants before inclusion in the project.

This project was undertaken as a quality improvement initiative at Bint Al-Huda Hospital and, as such, was not formally supervised by the institutional review board as per their policies. Similarly, the partners' human research committee (Massachusetts General Hospital, Boston) reviewed the project and found ethical approval not applicable owing to its quality improvement nature.

Data collection

The interviews and small-group discussions consisted of open-response questions related to health-care services, providers, equipment, supplies and medications. Other questions included the most common clinical presentations of patients presenting for care, the continuing medical education needs of staff and other recommendations for improving patient care.

Additionally, we collected data on all newborns born at the hospital during the preceding year (1 January 2012 to 31 December 2012) to gain a representative understanding of perinatal and newborn outcomes in the region. Data collected from death certificates, delivery registers and unit registers were used to determine the number of perinatal deaths; number of neonatal deaths; perinatal mortality rate; neonatal mortality rate; potential risk factors, such as birth weight or sex; and the leading causes of death.

Data analysis

The interview responses and birth data were analysed using standard statistical methods. The 2 lead field researchers conducted initial theme analysis of the detailed assessment field notes, which were reviewed and clarified by consensus with the larger research team. Descriptive statistics with frequencies and rates were prepared using Microsoft *Excel* 2010. To determine the associated risk factors for mortality [odds ratio (OR) and 95% confidence interval (CI)] and their statistical significance, logistic regression was performed using *MedCalc*, version 12.7.8.

Results

Maternal and newborn health-care needs assessment

Bint Al-Huda Maternity and Child Teaching Hospital provides maternal and newborn health-care services to the

2.5 million people in the community of Nasiriyah and surrounding areas. It also serves as the referral centre for 4 other hospitals in the region.

The 300-bed hospital includes 120 newborn/paediatric beds, 180 obstetric beds, emergency room for paediatric patients (30 beds, 4 of which are monitored), 2 operating theatres, an antenatal care clinic, a labour and delivery suite with 2 labour rooms and 8 total delivery beds, newborn resuscitation areas between the 2 delivery rooms (with 2 radiant warmer beds) and adjacent to the 2 operating theatres (with 4 radiant warmer beds), post-anaesthesia care unit, 2 postpartum units (32 beds total) (1 unit with private rooms and 1 unit with multiple-bed rooms).

There are a total of 18 paediatricians on a rotating schedule that covers the paediatric and neonatal service, including 3 senior attending-level paediatricians, 5 paediatric fellows and 10 paediatric residents (each on a 3-month paediatric rotation). For obstetrics, there are 2 senior attending-level obstetrician-gynaecologists and currently 1 visiting obstetrician-gynaecologist, who assists with the large number of caesarean sections performed at the hospital. Obstetric residents provide a large bulk of the obstetric care, including 2 residents who triage and support the labour and delivery unit.

In the labour ward, there is a 1:4 nurse to patient ratio, and during delivery the ratio is 1:1. During uncomplicated vaginal deliveries, nurses are the primary provider, with physicians supervising and assisting with high-risk deliveries and complications. Nurses do not assess labour patterns, fetal status or collect patient vital signs. Nurses work on a schedule of 24 hours on and 48 hours off. The reported level of nursing skills varies widely; some nurses have no formal training, some have completed a diploma-type programme and few have completed a baccalaureate degree. After an unexpected outcome (e.g. neonatal death, maternal complications) there is no routine debriefing, root-cause analysis or quality improvement initiatives for the purpose of performance improvement in the future.

Bint Al-Huda Hospital is fairly well-equipped with the essential supplies for newborn and maternal health. There are 18 incubators in the inborn newborn units and an additional 30 incubators for newborns born outside the hospital and admitted to Bint Al-Huda. The hospital has a Doppler machine to assess fetal heart rate (used only by physicians) and an electronic fetal heart monitor (used for fetal heart assessment but not for uterine contractions).

The hospital has a limited supply of bag-mask devices and bulb suctions in the newborn resuscitation areas, and it appears these are used infrequently. Currently, the hospital uses deep suctioning with wall-mounted suction catheters for newborns. Only 2 of the 6 warmers had a functioning heat source. The hospital does not have sufficient supplies of alcohol wipes, equipment sanitizing wipes, IV pumps, absorbent towels for drying newborns after delivery, blankets for swaddling newborns or sheets or pillows for labouring mothers. There is regular doubling of patients, with mothers sharing labour beds and newborns sharing cribs and warmers.

Assessment and documentation of maternal vital signs, labour pattern, fetal response, and complications during pregnancy and labour is scarce. The World Health Organization (WHO) modified partograph was recently introduced, but its use remains sporadic. Physicians are the only clinical staff members who obtain vital signs, monitor labour and monitor fetal response to labour. There is minimal personnel support for women in labour.

Following birth, newborns are usually separated from their mothers for more than 30 minutes. There is no skin-to-skin care. Following uncomplicated vaginal deliveries, mothers and their newborns remain in the hospital only 4 hours due to space constraints. After caesarean section delivery, they stay 2 days. There is no consistent change of bed coverings, hand washing or changing of gloves between patients.

The hospital provided 24 909 deliveries during the study year, or a mean of 68.2 deliveries/day. The monthly caesarean section rate is reportedly 40–60%, which is well above the WHO recommended rate of 10–15% (5). Although the high rate at this hospital was reported to be due in part to its role as a tertiary referral centre for higher-risk pregnancies, it was also attributed to lack of training in appropriate management and to a high staff workload.

The vast majority of deliveries in the Nasiriyah community are facility-based deliveries occurring at Bint Al-Huda Hospital, the only referral centre in the region. An estimated 5–10% of deliveries may occur outside of facilities among traditional birth attendants, community midwives and/or family members. Staff reported that reasons for non-facility-based deliveries include limited access in rural areas, transport costs (even though hospital care is free) and cultural beliefs. Staff believe however, that the community typically trusts and respects the hospital. Within the greater Dhi Qar Province, for which Nasiriyah is the capital, there were 65 699 births during the same time period, with 27.4% of the provincial deliveries occurring at Bint Al-Huda Hospital. Nevertheless, within Nasiriyah, a large majority of both high-risk and normal-risk deliveries reportedly occur at the hospital.

Peri- and neonatal mortality rates and associated factors

Among the 24 909 births analysed in the study, the total number of perinatal deaths (stillbirths and deaths within the 1st 6 days of life) was 683,

with 114 stillbirths and 569 neonatal deaths occurring in the 1st week of life (Table 1). As a result, the perinatal mortality rate (stillbirths and early neonatal deaths) was 27.4 per 1000 total births.

The total number of neonatal deaths (deaths occurring within the first 28 days of life) was 766, with 569 deaths occurring in the 1st week of life and 197 deaths occurring between the 7th and 28th day after birth. The neonatal mortality rate (NMR) was therefore 30.9 per 1000 live births

The leading causes of death were respiratory distress (34.1%), prematurity (24.3%) and birth asphyxia (20.6%).

The demographic data of all live births (n = 24 795) at Bint Al-Huda Maternity and Child Teaching Hospital in 2012 are shown in Table 2.

Male neonates had a higher NMR (39.1/1000 live births) compared with female neonates (23.0/1000 live births) (P < 0.001) (Table 3). There were 2315 (9.1%) low-birth-weight babies, and the average NMR for this group (258.4/1000 live births) was higher than the NMR for the normal-weight babies (16.3/1000 live births) (P < 0.001).

Using logistic regression, the associated risk factors for NMR were gestational age < 37 weeks (OR 19.4; 95% CI: 16.7–22.9), male sex (OR 1.70; 95% CI: 1.46–1.96), neonatal weight < 2.5 kg (OR 12.5; 95% CI: 10.8–14.6), mother's age > 35 years (OR 1.50; 95% CI: 1.21–1.86), mother's residence in a rural area (OR 1.17; 95% CI: 1.01–1.35), and vaginal mode of delivery (OR 1.67; 95% CI: 1.44–1.94). There was no significant association between NMR and antenatal care (OR 1.23; 95% CI: 0.96–1.56) and mother's age < 18 years (OR 1.38; 95% CI: 0.99–1.92) (Table 4). Regression analysis was not conducted on the 114 stillbirths as demographic data were not available in the database.

Table 1 Data on stillbirths and neonatal deaths at Bint Al-Huda Maternity and Child Teaching Hospital, Nasiriyah, southern Iraq, 2012

Variable	No. of births	%
Perinatal deaths		
Stillbirths	114	16.7
Early neonatal deaths (day 1–6)	569	83.3
Total perinatal deaths	683	100.0
Neonatal deaths		
Early neonatal deaths (day 1–6)	569	74.3
Late neonatal deaths (day 7–28)	197	25.7
Total neonatal deaths (day 1–28)	766	100.0
Causes of neonatal mortality		
Respiratory distress	261	34.1
Prematurity	186	24.3
Asphyxia	158	20.6
Sepsis	63	8.2
Congenital anomalies	31	4.0
Congenital pneumonia	10	1.3
Unknown	57	7.4

Table 2 Demographic data of all live births at Bint Al-Huda Maternity and Child Teaching Hospital, Nasiriyah, southern Iraq, 2012 (n = 24 795 infants)

Variables	No. of births	%
Birth weight (kg)		
< 1.5	361	1.5
1.5–< 2	527	2.1
2–< 2.5	1 034	4.2
≥ 2.5	22 873	92.2
Gestational age (weeks)		
< 37	2 402	9.7
≥ 37	22 393	90.3
Sex		
Female	12 609	50.9
Male	12 186	49.1
Mother's age (years)		
≤ 18	946	3.8
19–35	21 467	86.6
≥ 36	2 382	9.6
Mother received antenatal care		
Yes	22 752	91.8
No	2 043	8.2
Mother's residence		
Rural	14 321	57.8
Urban	10 474	42.2
Mode of delivery		
Vaginal delivery	13 233	53.4
Caesarean section	11 562	46.6

Discussion

After decades of conflict and sociopolitical disruption, Iraq's health services remain fractured and fragile. Efforts are underway to restore what was once among the best health-care systems in the region, but significant work is still needed, especially in southern Iraq, which has historically been overlooked. With a catchment population of 2.5 million and at least 20 000 deliveries per year, the Bintu Al-Huda Hospital is a key site of maternal and newborn care in southern Iraq. Our study illustrates the many challenges in providing essential newborn and maternal health care in a country recovering from years of instability and conflict.

At 30.9 deaths per 1000 total live births, the neonatal mortality rate is high, with low-birth-weight neonates and male neonates at highest risk for death. The mortality rate is much higher than that of Iraq as a whole (20/1000 live births) and is significantly higher than the rates in many surrounding countries in the Eastern Mediterranean Region (*6*).

At Bint Al-Huda Hospital, there is a clear need for additional supplies to increase the safety and cleanliness of labour and delivery. In the newborn resuscitation areas, additional bag-mask devices, bulb suctions and a functioning heat source for the warmers could potentially prevent a number of neonatal deaths. Deep suctioning with a suction catheter should only be done rarely, as it can cause a vasovagal reflex that reduces the newborn's heart rate and respiratory rate. There is currently no continuous positive airway pressure (CPAP) machine, which could be a useful and, in the case of bubble CPAP, is a very simple intervention to reduce newborn morbidity and mortality due to respiratory complications. Additionally, infections could be reduced with improved clean birth practices, greater infection control and increased number of labour beds and cribs to minimize the number of patients sharing space (*7–11*).

Table 3 **Neonatal mortality rate (NMR) by demographic variables at Bint Al-Huda Maternity and Child Teaching Hospital, Nasiriyah, southern Iraq, 2012 (*n* = 24 795)**

Variable	NMR (per 1000 live births)	*P*-value
Total	30.9	
Gestational age (weeks)		
< 37	216.6	< 0.001
≥ 37	11.0	
Sex		
Female	23.0	< 0.001
Male	39.1	
Neonatal weight (kg)		
< 1.5	465.4	
1.5–< 2	187.8	< 0.001
2–< 2.5	121.9	
≥ 2.5	16.3	
Mother's age (years)		
≤ 18	40.1	
19–35	29.1	< 0.001
≥ 36	43.7	
Antenatal care		
Yes	30.3	0.110
No	37.2	
Mother's residence		
Rural	32.9	0.043
Urban	28.2	
Mode of delivery		
Vaginal delivery	38.0	< 0.001
Caesarean section	22.7	

There was an evident need and desire for additional staff training among providers in the hospital. As a teaching institution, with rotating students and trainees, there is a strong interest in education and a commitment to improving the capacity of the hospital to provide high-quality care to women and children in the Nasiriyah region. Our assessment showed that training topics should include basic sanitary practice and infection control, basic emergency obstetric and newborn care (e.g. the BEmONC project), essential newborn care, newborn resuscitation (e.g. the Helping Babies Breathe programme, Newborn Resuscitation Programme), setting-appropriate intensive newborn care (e.g. the STABLE programme) and others. Staff should be trained in evidence-based clinical guidelines, such as indications for caesarean section, triage, danger signs, etc., and these should be posted at all points of care for convenient and frequent reference by providers. Once essential care has been effectively established, the focus can shift towards rebuilding advanced critical care services. As a teaching and referral centre, Bint Al-Huda Hospital should also continue to help build capacity among lower-level referring facilities in the region.

Additionally, routine debriefing and root-cause analysis among providers should be in place to improve future

Table 4 Logistic regression analysis of factors associated with neonatal mortality at Bint Al-Huda Maternity and Child Teaching Hospital, Nasiriyah, southern Iraq, 2012

Variable	OR (95% CI)	*P*-value
Gestational age (weeks)		
< 37	19.4 (16.7–22.9)	< 0.001
≥ 37 (Ref.)		
Sex		
Male	1.70 (1.46–1.96)	< 0.001
Female (Ref.)		
Neonatal weight (kg)		
< 2.5	12.5 (10.8–14.6)	< 0.001
≥ 2.5 (Ref.)		
Mother's age (years)		
≤ 18	1.38 (0.99–1.92)	0.06
19–35	1.50 (1.21–1.86)	< 0.001
≥ 36 (Ref.)		
Antenatal care		
No	1.23 (0.96–1.56)	0.096
Yes (Ref.)		
Mother's residence		
Rural	1.17 (1.01–1.35)	0.04
Urban (Ref.)		
Mode of delivery		
Vaginal delivery	1.67 (1.44–1.94)	< 0.001
Caesarean section (Ref.)		

OR = odds ratio; CI = confidence interval; (Ref.) = reference category.

performance (*12,13*). Quality improvement initiatives should be introduced and these should have strong local ownership (*14*). This approach would, ideally, facilitate staff-led identification of improvement priorities, development of setting-appropriate solutions, regular monitoring of progress towards clearly delineated goals, as well as any needed course corrections (*15*).

Overall, this study may provide valuable lessons for Iraq and for other conflict-affected regions that will need to reconstruct health systems and build indigenous health-care capacity. While addressing problems in the physical infrastructure of hospitals is an important facet of reconstruction, so too is the need to strengthen hospital management systems; ensure appropriate stocks of supplies, medications and medical equipment are requested from the Ministry of Health; implement quality improvement initiatives; and provide clinical staff with continuing education and training on evidence-based care to ensure the provision of quality health services (*16*). Subsequent to this evaluation, many of these proposals are now under way at Bint Al-Huda Hospital.

This study had some limitations. The interviews and data collection did not go beyond Bint Al-Huda Hospital. The mortality statistics and risk factors were limited to facility-based deliveries at the hospital. Because it serves as a referral centre, this hospital may have higher mortality rates as a consequence of serving generally higher-risk patients. However, this teaching hospital provides the vast majority of coverage in its community for both high-risk and normal-risk deliveries, and we believe that the numbers are a good representation of the region as a whole. The survey involved hospital providers, administrators and staff; it did not include direct assessment of patients or community perceptions. Another limitation of the study is a result of the existing health information system. Our available datasets involved monthly collated data rather than disaggregated data. Consequently, some descriptive results were not available, such as standard deviation. Stillbirth data did not include gestational age, weight and other descriptors and this prevented additional analysis.

In conclusion, improving maternal and birth outcomes in southern Iraq requires a collaborative effort to ensure quality maternal and newborn services. Improvement will require implementing additional evidence-based clinical guidelines, investing in supplies and equipment, establishing quality improvement initiatives and introducing regular in-service training and support. Currently identified training needs include intrapartum monitoring and care, newborn resuscitation, essential newborn care and infection control.

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Experiences of stigma among hepatitis B and C patients in Rawalpindi and Islamabad, Pakistan

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المعاناة من الوصمة لدى مرضى التهاب الكبد "بي" و "سي" في روالبندي وإسلام أباد بباكستان

أبرار رفيق، محمد عارف نديم ثاقب، شجيع صديقي، محمد عارف منير، هما قريشي، نجمة جاويد، سميرا ناز، إكرام زاده ترمذي

الخلاصة: التهاب الكبد "بي" و "سي" مرضان مزمنان لهما تأثيرات نفسية واجتماعية يمكن أن تؤدي إلى تردي نوعية الحياة. وكان الهدف من هذه الدراسة تحديد المعاناة من الوصمة لدى عينة من مرضى التهاب الكبد "بي" و "سي" في باكستان. ففي دراسة مستعرضة أجاب 140 مريضاً داخلياً وخارجياً في 3 مستشفيات للرعاية الثالثية في إسلام اباد وروالبندي على استبيان شبه منظَّم عن الوصمة التي يلاقونها من الأقارب والأصدقاء والأزواج ومقدمي الرعاية الصحية، وعن مشاكل العمل/ المشاكل المالية. فقال غالبية المرضى (75٪) إنهم اضطروا إلى تغيير نمط حياتهم؛ وكان ذلك لدى الذكور أكثر من الإناث بشكل ملحوظ. وكانت الوصمة واضحة فيما يتعلق بسراية المرض، حيث أن 66٪ من المرضى لديهم خشية من احتمال نقل العدوى إلى الآخرين، وذكر 19٪ منهم أن أفراد الأسرة كانوا يتجنبون مشاركتهم في المناشف والصابون وأواني الأكل والشرب. وقد تأثرت العلاقات الزوجية لدى 51٪ من المرضى المتزوجين الذين أخبروا أزواجهم. وأظهرت تعليقات المرضى إحساساً بالتفرقة الأسرية والمجتمعية أدى بهم إلى الشعور بالإحباط والعزلة.

ABSTRACT Hepatitis B and C are chronic diseases with mental and social impacts which can result in poor quality of life. The aim of this study was to determine the experiences of stigma in a sample of hepatitis B- and C-positive patients in Pakistan. In a cross-sectional study, 140 inpatients and outpatients from 3 tertiary-care hospitals in Islamabad and Rawalpindi answered a semi-structured questionnaire about stigma experienced from relatives, friends, spouse and health-care providers, and about work/financial problems. The majority of patients (75%) said they had had to change their lifestyle, and significantly more were males than females. Stigma was marked in terms of disease transmission, with 66% of patients fearing that they could transmit the infection to others; 19% said that family members avoided sharing towels, soap and eating and drinking utensils. Marital relationships were affected for 51% of married patients who had told their spouse. Patients' comments showed a sense of family and societal discrimination resulting in feelings of disappointment and isolation.

Expériences de stigmatisation chez des patients atteints d'hépatite B et C à Rawalpindi et Islamabad (Pakistan)

RÉSUMÉ L'hépatite B et C sont des maladies chroniques qui ont des répercussions mentales et sociales susceptibles d'entraîner une mauvaise qualité de vie. L'objectif de la présente étude était des dégager les expériences de stigmatisation au sein d'un échantillon de patients positifs pour l'hépatite B et C au Pakistan. Dans une étude transversale, 140 patients hospitalisés ou consultant dans les services de soins externes de trois hôpitaux de soins tertiaires à Islamabad et Rawalpindi ont répondu à un questionnaire semi-structuré portant sur la stigmatisation infligée par les parents, les amis, le conjoint et les prestataires de soins de santé, et sur les problèmes professionnels/financiers. La majorité des patients (75 %) ont déclaré qu'ils avaient dû changer de mode de vie et la proportion d'hommes était supérieure à celle des femmes. La stigmatisation était marquée pour la transmission de la maladie, avec 66 % des patients craignant de transmettre l'infection à d'autres personnes ; 19 % ont indiqué que les membres de leur famille évitaient de partager les serviettes de toilette, le savon, la vaisselle et les couverts. Les relations conjugales étaient affectées chez 51 % des patients mariés qui avaient informé leur conjoint. Les commentaires des patients font état d'une certaine discrimination familiale et sociale à l'origine de sentiments de désarroi et d'isolement.

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Introduction

Hepatitis B and C are major causes of chronic liver disease leading to cirrhosis and hepatocellular carcinoma (*1*). Because the hepatitis B virus (HBV) and C virus (HCV) spread through blood and body secretions, including sexual routes, patients may be considered dirty or immoral (*2*). Stigma is defined as a "sign of social unacceptability: the shame or disgrace attached to something regarded as socially unacceptable" (*3*) and is a term used by psychologists and sociologists when "elements of labelling, stereotyping, separation, status loss, and discrimination occur together in a power situation that allows them" (*4*). Stigmas related to hepatitis B and C infection include isolation from society, problems with close personal relationships, loss of employment, fear of transmitting the disease, lifestyle and emotional difficulties and problems within the provider–patient relationship (*5*).

A great degree of negative psychological, social and physical symptoms have been reported with chronic HBV infection (*6*). Feelings of social isolation among hepatitis patients creates a fear of disclosing their disease to anyone (*7,8*). Patients use terms like "leper" and "hermit" to describe their social isolation. Almost 50% of HBV/HCV-positive patients report suffering from discrimination, which includes alienation from co-workers, family members and even from health-care providers and leads to a high perceived impact of these symptoms on quality of life (*1*). Job discrimination has been reported in 20% of patients, while 8% felt that medical professionals denied them services because of their hepatitis-positive status (*3*). In one study 41% of patients had some type of communication difficulties with their doctors (*9*). Fear of transmitting the disease to family members and close contacts means that hepatitis patients may choose to limit their social contacts, thus adding to their isolation and misery (*2*). Among the emotional problems associated with hepatitis, irritability is the most common symptom (*5*). Moreover, feelings of shame and worry and hesitation in discussing health problems with life partners creates a barrier to seeking health care and adopting the necessary preventive measures to avoid disease transmission (*10*). The media portrayal of diseases such as hepatitis, tuberculosis and sexually transmitted diseases as "bad" diseases reinforces experiences of stigma (*11*).

In Pakistan, the estimated prevalence of HBV in the population is 2.5% and of HCV is 4.9% (*12*). A recent study from Karachi reported that HCV patients had to face a number of problems which varied according to patients' education, income, societal and family background as well as the behaviour of health-care providers (*13*). However, few data are available that describe the experiences and stigma associated with both different types of hepatitis. The current study was planned to identify the experiences of stigma among both hepatitis B and C patients in hospitals in Islamabad and Rawalpindi, Pakistan.

Methods

Study design and setting

This was a qualitative and quantitative study conducted in outpatient departments and inpatient medical wards of 3 tertiary-care hospitals in Pakistan: the Pakistan Institute of Medical Sciences in Islamabad, the Federal Government Services Hospital (Polyclinic) in Islamabad and the Holy Family Hospital in Rawalpindi, from June 2012 to January 2013.

Sampling

Patients with confirmed HBV and/or HCV infection who were aged over 18 years and had been diagnosed for more than 6 months were enrolled. As this was a qualitative study, a convenience sample of 140 patients was taken. Patients with acute hepatitis, hepatitis B or C with cancer, or coma were excluded. Patients coming to outpatient departments who met the inclusion criteria were informed about the objectives of the study and, after they had given written informed consent, were interviewed in a separate room by trained researchers. For inpatients, the patients admitted to gastroenterology wards of selected hospitals were approached, briefed about the study and asked to participate. After written informed consent had been taken, interviews were conducted. The diagnosis of all cases was confirmed from their medical records.

Data collection

A total of 80 outpatients and 60 inpatients were interviewed using a pretested, semi-structured questionnaire. All interviews were done in the local language (Urdu) by trained interviewers.

The questionnaire comprised 6 sections. Section 1 collected patients' background data (i.e. age, sex, marital status, occupation, social class and type of hepatitis) and how they thought they had acquired the disease. Section 2 was about personal stigma experienced by patients (i.e. how they had found out about the disease, feelings about being HBV/HCV-positive, fear of transmitting the disease, general behaviour of people around them, feelings of loneliness and isolation). Section 3 concerned stigma from the patients' close family members (brothers, sisters, parents), other relatives (cousins) and friends (i.e. had they informed family members and friends, had family/friends started ignoring/avoiding them, refusing to share personal belongings and avoiding eating, shaking hands or sitting with them). Section 4 was about stigma from the spouse (i.e. had they had informed spouse, what was spouse's reaction, how had it affected the marital relationship, fear of transmitting the

disease to a child). Section 5 concerned patients' experiences of medical treatment and health-care providers (i.e. were they receiving treatment for the disease, satisfaction with treatment, had they been given information and what were health-care providers' attitude/behaviour towards them). Section 6 was about patients' financial and job issues (i.e. were they working and if so had they informed work colleagues, had colleagues' behaviour towards them changed). Finally, for qualitative part of the study there was a blank space to record patients' experiences or feelings.

Occupation was grouped into government employee, private business worker, manual labourer or housewife. Socioeconomic status was defined based on employment, vehicle ownership and children's schooling (low = no family members permanently employed, no vehicle ownership and children studying in public school; middle = 1–2 family members employed, motorcycle ownership and children studying in private school; high = more than 2 family members employed, car ownership and children studying in private school).

A patient was defined as stigmatized if he/she experienced at least one of the following: loneliness and isolation, fear of transmission of virus, changes in the marital relationship or changes in colleagues' attitudes at work. Lifestyle change was defined as when a person experienced a change in routine activities due to weakness and behavioural changes with family, relatives and friends. Worry was defined as when a patient was anxious and troubled due to hepatitis. A stigmatizing attitude/behaviour of physicians was when patients felt that the physician was taking extra precautions or avoiding them rather than behaving as normal.

Ethical clearance was obtained from the hospital ethics review committee of the Pakistan Institute of Medical Sciences and the Federal Government Services Hospital (Polyclinic). Written consent was obtained from all patients before inclusion in the study.

Data analysis

The data were entered and analysed using *SPSS*, version 15. Descriptive statistics (numbers and percentages) are reported from the main survey and the differences between patients with and without stigma and between males and females were analysed by the *z*-test. Responses to open-ended questions during interviews were noted by the primary investigators. The qualitative data were analysed by the content analysis method. Transcripts were manually analysed by researchers, and texts with similar meanings were grouped into categories and subcategories after reaching a consensus. All quotations in this study are from the study participants.

Results

The demographic characteristics of the 140 study participants are shown in Table 1. A majority of respondents were males (61%), aged > 35 years (72%) and of lower socioeconomic status (70%). The great majority of patients were positive for HCV (82%) or HBV alone (17%); only 2 patients (1%) reported having dual infection.

Questionnaire data

Reaction to learning about disease status

The personal assessment of patients about their disease showed that 116 patients (83%) said they were worried when they found out they had hepatitis. A total of 104 patients (75%) agreed that hepatitis had affected their lifestyle (Table 2). Of these, 50/105 (48%) said that their routine activities were disturbed while 33 (31%) felt depressed and avoided social activities and gatherings.

Two-thirds of patients (66%) were afraid of transmitting the virus to others and 37% felt lonely and isolated (26% sometimes and 11% always). Among the 92 respondents who believed in viral transmission, 63 (68%) thought that the virus could be transmitted through sharing things (towels, utensils, etc.) and 12 thought it was transmitted via blood donations, 5 by sexual intercourse and 3 from other sources. However, 9 patients reported that this could be transmitted through both sharing things and blood donations.

Personal experiences of stigma

A total of 111 patients reported experiencing at least one kind of stigma. There were no significant differences in the age, sex or other demographic characteristics of the stigma patients compared with the total sample of patients (Table 1). There were also no differences by inpatient/outpatient status or duration of illness.

Relationship with relatives, friends and spouse

The great majority of patients said they had informed their close family members (98%), other relatives (94%) and friends (96%) about their disease (Table 2). When respondents were asked about the impact of the disease on their relationships 10% reported that family members, 24% that other relatives and 9% that friends had started ignoring or avoiding them after finding out about their disease status (Table 3), although the friends and relatives of around 20% of patients became sympathetic. Almost two-thirds of patients (64%) reported that family members felt worried and 26% that they had asked for treatment. However, 71% of patients felt that there was no change in the attitude and response of friends and of other relatives (53%). Although some patients reported that their family members were always (7%) or sometimes (12%) hesitant in sharing towels, soap, eating utensils, glasses and cups, 81% of patients did not notice any changes. Patients also reported noticing that

family and friends were hesitant about eating, shaking hands or sitting with them (Table 3).

A total of 112/125 married patients (90%) had told their spouse about their disease status (Table 2). In about half of these cases (57/112, 51%) patients reported that this had affected their marital relations; 46/57 (81%) said that their spouse avoided intercourse altogether and 11 (19%) had started using condoms. When asked to rate how much the disease affected their marital relations, 21% reported that it was very affected and 14% that it was only a little affected, while the remainder felt that they were not affected.

A total of 27 patients (22%) reported that virus could be transmitted from mother to newborn. When they were asked about preventive measures, 20 respondents had no information, while 3 believed that this could be prevented by avoiding breastfeeding. Only 2 patients knew that this could be prevented using family planning methods. Two patients discussed this with their treating physicians, who told them that the virus is not transmitted from mother to child.

Financial and job issues

Of the 35 employed patients, 23 were already employed while 12 had found a job after getting the diagnosis and 1 reported problems in getting a job. A

Table 1 Comparison of demographic characteristics of all patients with hepatitis B (HBV) and C virus (HCV) infection and those who experienced stigma

Patients' characteristics	Total (n = 140)		Experienced stigma (n = 111)		z-value	P-value
	No.	%	No.	%		
Sex						
Male	86	61	71	64	0.41	0.34
Female	54	39	40	36	0.41	0.34
Age (years)						
18–35	39	28	31	28	0.01	0.49
> 35	101	72	80	72	0.01	0.49
Socioeconomic status						
Upper	17	12	15	14	0.3	0.37
Middle	31	22	26	23	0.24	0.40
Lower	92	66	70	63	0.43	0.32
Marital status						
Married	125	89	99	89	0.02	0.49
Single	15	11	11	10	0.02	0.49
Occupation						
Government employee	36	26	31	28	0.39	0.34
Labourer	23	16	15	14	0.63	0.26
Housewife	43	31	31	28	0.48	0.31
Private business worker	25	18	22	20	0.39	0.34
Type of patient						
Outpatient	80	57	65	59	0.22	0.40
Inpatient	60	43	46	41	0.22	0.40
Duration of illness (years)						
≤ 1	50	36	41	37	0.20	0.42
≤ 2	19	14	17	15	0.39	0.34
≤ 3	22	16	14	13	0.69	0.24
≤ 4	10	7	10	9	0.54	0.29
≤ 5	37	27	28	25	0.21	0.41
Hepatitis status						
HCV	115	82	91	82	0.03	0.48
HBV	23	17	19	17	0.14	0.44
Both HBV + HCV	2	1	1	1	0.38	0.35

Table 2 Comparison of types of stigma experienced by male and female hepatitis B and C patients

Question	Total (*n* = 140)		Female (*n* = 54)		Male (*n* = 86)		*z*-value	*P*-value
	No.	%	No.	%	No.	%		
Personal stigma								
Affected lifestyle	105	75	32	59	73	85	3.41	< 0.001
Feel lonely and isolated	52	37	26	48	26	30	2.14	0.02
Fear of transmission of virus	93	66	35	65	58	67	0.32	0.37
Stigma from family members and friends								
Informed family members (brothers, sisters, parents)	137	98	53	98	84	98	0.19	0.42
Family members hesitant about sharing things (*n* = 137)	26	19	13	24	13	15	1.33	0.091
Informed other relatives (cousins)	131	94	50	93	81	94	0.37	0.36
Informed friends	134	96	52	96	82	95	0.27	0.39
Stigma from spouse[a]								
Informed spouse	112	90	41	84	71	93	1.74	0.04
Change in relationship with spouse	57	46	14	29	43	57	3.06	0.001
Stigma from health-care providers								
Getting treatment	115	82	38	70	77	90	2.9	< 0.001
Satisfied with treatment	106	76	37	69	69	80	1.59	0.06
Doctors did not provide information	79	56	28	52	51	59	0.86	0.19
Doctors showed normal attitude/behaviour	120	86	41	76	79	92	2.62	0.004

[a]*Percentages of those who were married: total n =125; women n = 49; men n = 76.*

majority (27, 77%) had informed their colleagues and 23 of them felt that there had been changes in the attitude of their colleagues. However, 8 patients did not share their disease status due to fear of bad reactions.

Treatment and relationship with health-care providers

A total of 115 patients (82%) were receiving treatment for the disease (Table 2) and 106 of them (92%) were satisfied with their treatment, although 56% said that doctors did not provide additional information about the disease. When asked about the attitude/behaviour of doctors, 86% reported that it was as normal (Table 2), while 8% said that doctors took extra precautions with them, 2% felt that doctors were avoiding them and the remainder did not respond.

Comparison of experiences of male and female patients

Male patients were significantly more affected than females were in term of changes in lifestyle (85% versus 59%) and changes in relationship with the spouse (64% versus 14%). They were also more likely to report receiving treatment (90% versus 70%) and that the attitude of doctors towards them was as normal (92% versus 76%). Significantly more females than males reported feelings of loneliness and isolation (48% versus 30%) (Table 2).

Qualitative data

The qualitative analysis of patients' comments showed that the experiences and feelings of patients reflected their exposure to stigma and varied from case to case. However, generally their comments showed the bitter trajectory of their life after hepatitis. The emotional disturbances due to changes in the behaviour of family members, relatives and friends were more commonly reported.

"It seems as if I am suffering from leprosy. I feel separated and isolated".

"I am depressed and feel lonely. I can't even sleep. Even my brothers have left me. It seems that everyone has left me. I have no interest in life."

"My family members and relatives don't want to make contact with me. They tried to avoid sharing glasses, cups and towels with me. I can't cook food in the kitchen. I am given my share of food separately in a separate place".

"My neighbours and colleagues think that this disease spreads through contact and so they avoid sharing things and even

Table 3 **Impact of knowledge about their disease status on relationships of hepatitis B and C patients with family members, other relatives and friends**

Question	Family members		Relatives		Friends	
	No.	%	No.	%	No.	%
Hesitant about eating, shaking hands or sitting with you? (n = 140)						
Every time	8	6	13	9	6	4
Sometimes	21	15	19	14	14	10
Never	111	79	108	77	120	86
Response of family after finding out about your disease? (n =137)						
Worried	88	64	–	–	–	–
Asked for treatment	35	26	–	–	–	–
Started ignoring	14	10	–	–	–	–
Response of relatives (n = 131) and friends (n = 134) after finding out about your disease?						
Same as before	–	–	70	53	95	71
Sympathetic	–	–	29	22	27	20
Started ignoring	–	–	32	24	12	9

eating and sitting with me. My family members even avoid sharing towels."

"My friends and relatives talk about my disease in a negative sense. I have separated my eating utensils, cup and glass. I personally feel that I have done something wrong."

The impact of the disease on marital relations was also severe and had complicated the family life of patients. The statements of a few patients were bitter.

"I feel depressed by the behaviour of my husband. He is avoiding sexual relations with me and is even reluctant to share eating utensils and other things. He is also hesitant about sitting and living with me. I want to end my life".

"My wife had been avoiding me since diagnosis of this disease. She even tried to keep my 7-year-old daughter away from me. I don't want to live anymore".

One woman said "I was engaged. When my fiancé and his family members found out that I am suffering from hepatitis C, they broke off the relationship. I was so worried and depressed about this attitude. This was unbearable for me. Since diagnosis there have been no proposals for me from my relatives because of this disease. Now I am engaged to someone outside my family but we have not told them that I am hepatitis C positive. I am afraid that if I told them the same incident may be repeated again".

Similarly, financial difficulties and discrimination at the workplace was also reported. Most of the patients had lost their jobs due to fatigue and weakness, some had been dismissed from their duties, some faced poor attitudes of colleagues and many faced difficulty in getting a job.

"I was a rickshaw driver, but due to hepatitis C, I became so weak that I could not work properly and to meet treatment costs I had to sell my rickshaw. My relatives have a bad attitude with me and nobody helped me".

"When my boss and colleagues found out that I have this disease, they have not only kicked me out but not even contacted me or talked to me. It was a hating attitude and I felt really very depressed".

"I was working in a hotel and applied for a job in the army as a cook. During the medical examination I found out that I was hepatitis C positive. They refused to take me, and when I asked the reason the staff said, 'You cannot join the army even as a sweeper' because of this disease. When the hotel (where I worked) knew that I had this disease, they fired me from the job. I was really tense and worried at that time and remained bedridden for 10 days".

"I wanted to go abroad for work but due to hepatitis I was declared medically unfit. Now I cannot get a job abroad or here in my country. I am extremely worried about my future. I feel that I can work but they don't give me a job".

"I was a daily wage labourer. For 6 months I have not done any work due to my illness. I am very worried".

Discussion

Analysis of the interviews has shown that HBV- and HCV-positive patients have to face difficulties in their routine life and that there are various types of stigmas that are attached to them. Marital relationships were strongly affected by the disease and in the present study; nearly half of married patients (51%) reported changes in their spousal relationship, and in the majority of cases spouses were avoiding sexual relations after hepatitis. The percentage reporting avoidance of sexual intercourse

from another study in Pakistan and a study in the United States were 27% and 17% respectively (*14,15*). A study describing social stigma in HCV-positive women concluded that women were concerned about sexual transmission, pregnancy and child care affecting their close relationships and their expected gender role (*16*). Although the literature shows a low risk of sexual transmission in intrafamilial relations (*17*) misconceptions of disease spread via sexual relationships with a partner is still prevalent in societies. There is a need to improve the level of awareness among the public about modes of transmission, especially for hepatitis-positive couples, as this may reduce their worries and help avoid difficulties in marital relationships.

Changes in lifestyle were reported by 75% of participants in the current study. This was either due to weakness (fatigue) or emotional disturbances (mood swings, anxiety, irritability, depression, etc.), which is consistent with previous reports (*18,19*). Change in patients' daily life has been attributed to worries and uncertainties associated with hepatitis due to its slow and silent nature as well as a lack of proper information about its transmission, prognosis and treatment (*20*). Similarly, a fear of transmitting infection to others by sharing things such as eating utensils, cups, glasses and towels was expressed by 68% of our cases, indicating poor knowledge about transmission of HBV/HCV. Similar findings were reported in other studies (*14,16,21*).

Stigma from health-care providers was reported by few patients in the present study, which contrast with the findings of some other studies (*11,22*). On the other hand, almost half of patients thought that doctors did not provide information about the disease. A diagnosis of hepatitis B and C is an opportunity for health-care providers to create awareness about the disease and to encourage patients in their commitment to treatment and self-care.

Stigma related to hepatitis occurs in both sexes; however, female patients have been reported as more concerned with family and social relations, sexual transmission and pregnancy and child care as compared with males and this concern affects their relationships and ability to fulfil their gender roles (*16*). When the experiences of male and female patients were compared in our study, males were more affected than females were in term of changes in lifestyle, fear of disease transmission and changes in relationship with the spouse. In contrast, more females than males reported feelings of loneliness and isolation.

The findings of the open-ended questions revealed that a majority of patients had bitter experiences in their routine life. The behaviour of family members or friends has been reported to result in feelings of depression and isolation (*23*) and it was also reported previously by patients in Karachi, Pakistan, that they faced difficulties from their family member resulting in increased suffering (*13*). Breakup of relationships with spouses or fiancés were noted in this study and were also reported in a study from the United States (*15*). Similarly, the financial pressure was also immense, due either to poor attitudes of employers and colleagues or to physical inability to accomplish tasks properly. It was noted that some patients reported being badly affected by knowledge of their disease, by the loss of a job or inability to obtain a visa to travel. This needs to be improved and, if someone is found to be positive during screening, there should be proper counselling and mechanisms to guide them.

The overall assessment showed that experiences of stigma varied depending on the patient's situation. However, these findings indicate that HBC/HCV patients face discrimination in every walk of life, including breakage in inter- and intrafamilial relations, financial constraints due to loss of job or problems in getting a new job.

This was a hospital-based study conducted on patients presenting at the same locality, and therefore these findings could not be generalized.

Conclusions

Hepatitis B and C patients experience emotional disturbances due to knowledge about their disease status and its associated stigma leading to changes in their lifestyles. The stigmatization is mostly due to ignorance and lack of awareness about the mode of disease transmission among patients and their family members. Educational interventions are needed to overcome such misconceptions.

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Typology and credibility of Internet health websites originating from Gulf Cooperation Council countries

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أنماط ومصداقية مواقع الإنترنت الصحية التي منشؤها بلدان مجلس التعاون الخليجي

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الخلاصة: إن جودة المعلومات المتوافرة على مواقع صحية في دول مجلس التعاون الخليجي لم تقيَّم بصورة شاملة. وقد قام الباحثون من تشرين الثاني/ نوفمبر إلى كانون الأول/ ديسمبر من عام 2012 بالوقوف على جميع المواقع الوظيفية ذات الصلة بالصحة (ع = 925) والتي منشؤها بلدان مجلس التعاون الخليجي. وتم تسجيل البيانات المتعلقة بالمؤلف واللغة والتاريخ ومحتوى المعلومات ونمط الموقع. وتم وضع قائمة مرجعية جديدة لمواقع الإنترنت استناداً إلى معايير المصداقية والموثوقية الخاصة بمنظمة تقييم الإنترنت (مؤسسة الصحة على الإنترنت). فكانت 5 مواقع (0.5٪) فقط مستوفية لجميع فئات القائمة المرجعية. وكانت جميع المواقع باللغة الإنجليزية أو العربية، ما عدا موقع واحد. و10.1٪ فقط من المواقع سجلت سياسةَ خصوصيةٍ، و2.7٪ ذكرت مؤلف المعلومات، و51.0٪ كشفت عن ملكية الموقع، و80.6٪ قدمت تفاصيل الاتصال، و58.5٪ حددت تاريخ المعلومات. و1.7٪ فقط منها ذكرت سياسة إعلاناتها، و23.5٪ كشفت عن رُعاتها. وخلص الباحثون إلى أنه يجب على أصحاب المواقع الصحية في بلدان مجلس التعاون الخليجي أن يفكروا في العمل مع مؤسسة الصحة على شبكة الإنترنت أو المنظمات المماثلة لتلبية معايير المصداقية المعترف بها دولياً.

ABSTRACT The quality of information available on health websites in the Gulf Cooperation Council (GCC) countries has not been comprehensively assessed. From November to December 2012 we retrieved all functional health-related websites (*n* = 925) originating in GCC countries. Data on authorship, language, date, information content and type of site were recorded. A novel website checklist was developed based on the credibility and trust criteria of the Internet assessment organization Health On the Net Foundation (HON). Only 5 sites (0.5%) fulfilled all checklist categories. All websites except one were in English or Arabic languages. Only 10.1% of websites posted a privacy policy, 2.7% stated the authorship of information, 51.0% disclosed website ownership, 80.6% provided contact details and 58.5% dated information. Only 1.7% reported their advertising policy and 23.5% revealed sponsorships. GCC health website owners should consider working with the HON or similar organizations to meet internationally recognized credibility criteria.

Typologie et crédibilité des sites Web de santé créés dans des pays du Conseil de Coopération du Golfe

RÉSUMÉ La qualité des informations disponibles sur les sites Web de santé des pays du Conseil de Coopération du Golfe n'a pas été évaluée de manière exhaustive. De novembre à décembre 2012, nous avons répertorié tous les sites Web actifs consacrées aux questions de santé (*n* = 925) créés dans des pays du Conseil de Coopération du Golfe. Les données sur les auteurs, la langue, la date et les informations disponibles ainsi que sur le type de site Web ont été enregistrées. Une nouvelle liste de contrôle des sites Web innovante a été élaborée à partir des critères de crédibilité et de confiance de la fondation *Health On the Net* (HON) - la Santé sur Internet, organisme d'évaluation des sites Web. Seuls cinq sites (0,5 %) avaient des résultats satisfaisants pour toutes les catégories de la liste de contrôle. Tous les sites Web, sauf un, étaient en langue anglaise ou langue arabe. Seuls 10,1 % des sites avaient publié une politique de confidentialité ; 2,7 % citaient les auteurs des informations ; 51,0 % révélaient l'identité du propriétaire du site ; 80,6 % fournissaient des coordonnées et 58,5 % avaient daté les informations publiées. Seuls 1,7 % précisait leur politique en matière de publicité et 23,5 % indiquaient les parrainages. Les propriétaires des sites dédiés à la santé dans des pays du Conseil de Coopération du Golfe devraient envisager de collaborer avec la fondation HON ou des organisations similaires pour satisfaire aux critères de crédibilité internationalement reconnus.

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Introduction

e-health is an umbrella term for health information delivered over electronic networks. It includes information and data for health-care professionals as well as public health information, which is also known as Internet health or web health (the focus of this study). Internet health information is growing at a fast pace in the 6 Gulf Cooperation Council (GCC) countries—Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates (UAE). In 2006, Al Shorbaji recorded only 258 medical and health-related sites in the 22 countries of the World Health Organization Eastern Mediterranean Region (EMR), which includes the Gulf countries: he later located 335 sites in 2008, an increase of 29.8% (*1*). For this study in 2012, which is the first comprehensive overview of Internet health information in the GCC, more than 1200 websites were initially identified. The increase can be attributed to several factors: governments' development of information and communications technology in general, including e-learning, e-health and e-governance, as part of Gulf economic diversification strategies (knowledge economies); progress in medical education, biomedical research and health informatics programmes and associations in the region; growing health consumerism by the public due to rising levels of educational attainment; and increasing use of the Internet in the region in general (e.g. by 2008–09 Qatar and the UAE were categorized by the International Telecommunication Union as Internet "highly penetrated countries") (*2*).

Known barriers to e-health development in the Arabic-speaking world include the lack of culturally sensitive Arabic language information, the use of online information for self-diagnosis, and access problems such as technological illiteracy and the high cost of Internet services (*3*). These concerns possibly explain Al-Ghamdi's findings in a 2011 survey of Riyadh outpatients that only 5.7% of respondents always trusted health-related information from the Internet and only 51.4% sometimes trusted the information (*4*). Similarly, in a survey of 450 Saudi women in 2009, the Internet was listed as 5th in importance out of 6 health information awareness resources (*5*).

The quality of information available on health websites in the GCC has not been comprehensively assessed, despite some uses of e-health that are specific to Gulf populations. Due to a shortage of female physicians in the EMR and women's reluctance to submit to examination by male physicians (*6*), Arab women may be accessing the Internet instead for health information. Furthermore, patients from Gulf populations present with unique burdens of disease (e.g. consanguineous genetic disorders, diabetes and chronic obstructive pulmonary disease). Internet health information provides relevant resources for these particular diseases and geographically specific concerns (*7*). The purpose of this study was to determine the kind and general quality of publically accessible Internet health information on health websites originating in the GCC and with content aimed at a GCC audience. A novel website credibility checklist was developed for the study by the authors based on the credibility and trust criteria of the Internet assessment organization Health On the Net Foundation (HON).

Methods

Literature search

Pilot searches indicated that the Google search engine (http://www.google.com.qa/) retrieved the largest number of websites. Data were collected over the period November to December 2012 by using the following Google keyword searches in Arabic and English: GCC country name + health (الصحة), medicine (الطب), disease (المرض), hospital (المستشفى) and clinic (العيادة). The first 800 results were examined. After 500–600 results, the search engine generally returned irrelevant data. All health and medical links on retrieved sites were followed and recorded, and the authors therefore believe that the search was exhaustive.

Inclusion criteria included websites wholly devoted to health and medicine with a server originating in the GCC and content aimed at a GCC audience. Examples included: portals, hospitals, clinics, spas, diseases, self-help sites, support groups, organizations, associations, societies, universities, research centres, journals, conferences, commercial sites selling products and individual doctor's sites. Blogs were not recorded unless the site was wholly health-related. Health news articles on non-health-related sites were also excluded as well as international employment sites advertising Gulf health positions.

Tools

The websites were categorized by type of website using a scheme adapted from Huziah et al.'s 2009 study of Arabic language health sites prepared for the HON (*8*). Huziah's study retrieved 218 Arabic sites from the Arabic-speaking countries and analysed a random sample of 120 of them. In addition, we also made use of critical information literacy factors drawn primarily from the Information Literacy Competency Standards for Higher Education of the Association of College and Research Libraries (ACRL). These factors are necessary for an Internet health website user to successfully carry out an information literacy task, e.g. to "evaluate reliability, validity, accuracy, authority, timeliness, and point of view or bias" (*9*).

To assess the credibility of the website information (authorship, date, complementarity, etc.), a novel website credibility checklist was developed based on the widely used

credibility principles of the Swiss health website accreditation agency HON. The 8 principles of the HON code of conduct for medical and health web sites (HONcode) (*10*) were converted into simple yes/no items to create an easy-to-use checklist. The HONcode principles are: Authoritative, Complementarity, Privacy, Attribution, Justifiability, Transparency, Financial Disclosure and Advertising Policy. A website that satisfied credibility principles such as the HONcode would lead an educated person to conclude that the information being presented was produced in a manner generating a high level of trust in its appropriateness, usefulness, accuracy and currency. The authors believe that a minimally credible website would comply with all checklist items, except in cases of non-applicability; for example, a site not making any medical claims would not satisfy the Justifiability category. The Internet Health Website Credibility Checklist is shown in Table 1.

English- and Arabic-speaking researchers collated and examined data related to the structure and credibility of the sites. The following information was collected for each website:

- country; website url; website name; server country of origin; language of website; audience; type of website; website content/structure; areas of site under construction; links to other health information websites;
- authorship of information; qualifications of authors revealed;
- complementary statement (a statement that site information should be used to complement and not replace the advice of a licensed health-care practitioner);
- privacy policy disclosed;
- date of last update;
- claims justified; accreditation seal shown;
- contact details provided; ownership disclosed; sponsorships revealed;
- advertising policy disclosed; and
- notes on anomalies.

In order to eliminate observer bias, the researchers completed 3 independent pilot assessments of a random sample of 25 sites, the objective being to reach consensus in the application of definitions. This study did not collect measures of website usability or accessibility for people with hearing and vision impairments.

Results

Typology of GCC websites: health information & services

The initial total number of websites retrieved was 1243 and then reduced to 925 after applying the exclusion criteria. Saudi Arabia led the GCC countries with 318 sites, followed by the UAE with 270 (Figure 1). However, a calculation of per capita websites (i.e. number of sites per 1000 inhabitants) revealed that Bahrain had the strongest web health presence with 0.71 sites per 1000, followed by UAE (0.51), Kuwait (0.43), Qatar (0.32), Oman (0.23) and Saudi Arabia (0.12).

Table 2 summarizes the type of websites available in the GCC. The majority of websites concerned private hospitals and clinics (26.8%), private medical practices (11.3%) and commercial sites selling health products/services to physicians or hospitals (10.1%). A low

Table 1 Checklist to judge the general quality of health websites originating in Gulf Cooperation Council countries based on Health On the Net (HON) Foundation principles, and number of sites meeting checklist criteria, November–December 2012 (*n* = 925)

HON code of conduct principle	Internet health website credibility checklist (authors)	Checklist (yes/no) explanation	Sites meeting checklist criteria	
			No.	%
1. Authoritative	Authorship	Are identities and qualifications of authors revealed?	25	2.7
2. Complementarity	Complementarity	Is there a statement that information should not replace professional consultation?	112	12.1
3. Privacy	Privacy policy	Is a privacy policy displayed?	93	10.1
4. Attribution	Date	Is the website information dated?	541	58.5
5. Justifiability	Justifiability	Are medical claims/benefits backed by cited, peer-reviewed evidence?	33	7.2
6. Transparency	Contact details	Are email, webform, telephone or surface mail contact details displayed?	746	80.6
7. Financial disclosure	Sponsorships	Are funding sources identified?	217	23.5
8. Advertising policy	Advertising policy	Is an advertising policy displayed?	16	1.7
All		Sites with all features	5	0.5

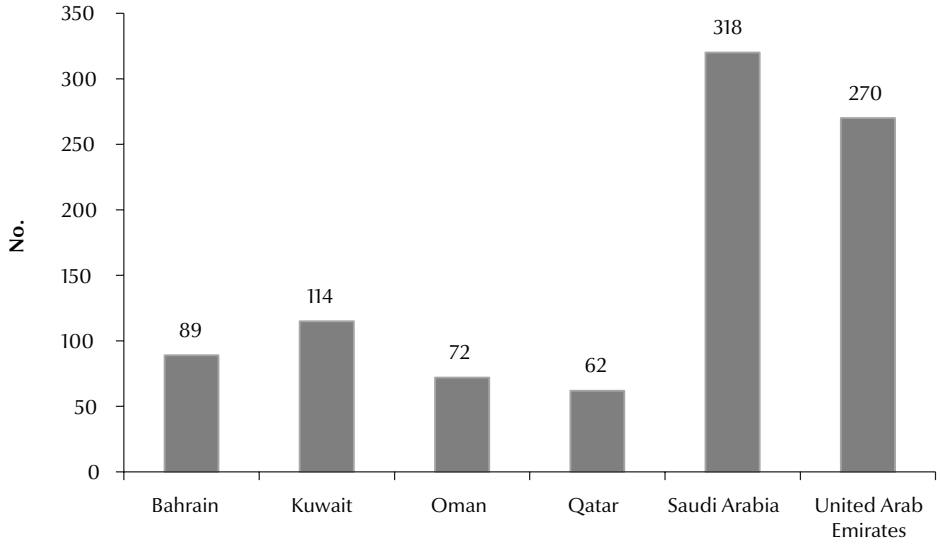

Figure 1 Total number of health websites originating from Gulf Cooperation Council countries, retrieved by country (*n* = 925), November–December 2012

number of academic websites (5.0%) and research centres or institute websites (1.1%) were found.

Figure 2 records the types of information that were found on GCC websites. Information on 421 sites (45.5%) related to health services. Next in prevalence was information on specific diseases (209 sites; 22.6%) and health advertisements for commercial products or services (155 sites; 16.8%). Web health in the Gulf was aimed primarily at the general public (616 sites or 66.6% of information aimed at a general user). The most prevalent technical information specifically targeted towards health professionals was categorized as follows: 131 sites (14.2%) contained information on conferences and meetings announcements and 116 sites (12.5%) listed programmes/training for professionals. Only 6 sites (0.6%) provided links to online courses for professional use, and only 25 sites (2.7%) provided an online database or library.

Table 2 Analysis of types of websites originating from Gulf Cooperation Council countries, November–December 2012 (*n* = 925)

Website type[a]	No.	%
Private hospital or clinic	248	26.8
Private medical practice	104	11.2
Commercial products/service: for physicians	93	10.1
Other health website	86	9.3
Commercial products/service: for public	58	6.3
Government hospital or clinic	52	5.6
Health association: for diseases	47	5.1
Academic website	46	5.0
Conference	39	4.2
Health association: for professionals	36	3.9
Web portal or search engine	29	3.1
Journal or magazine	27	2.9
Health blog	24	2.6
Pharmacy	18	1.9
Health ministry	17	1.8
Health association: general public	13	1.4
Research centre or institute	10	1.1
Employment	1	0.1

[a] *Types may overlap.*

Language of GCC websites

The majority of websites were in English language (551 sites; 59.6%), followed by Arabic and English (241 sites; 26.1%) and Arabic only (132 sites; 14.3%). Only 1 site (0.1%) retrieved in this study was in a language other than Arabic or English.

GCC websites meeting HON code of conduct principles

The authors applied the 8 checklist principles to the 925 retrieved websites and the results are tabulated in Table 1. Only 5 sites (0.5%) fulfilled all of the checklist categories, 3 of which displayed the HONcode credibility seal on their homepage.

- Authoritative (authorship): in 25 (2.7%) of the GCC websites the iden-

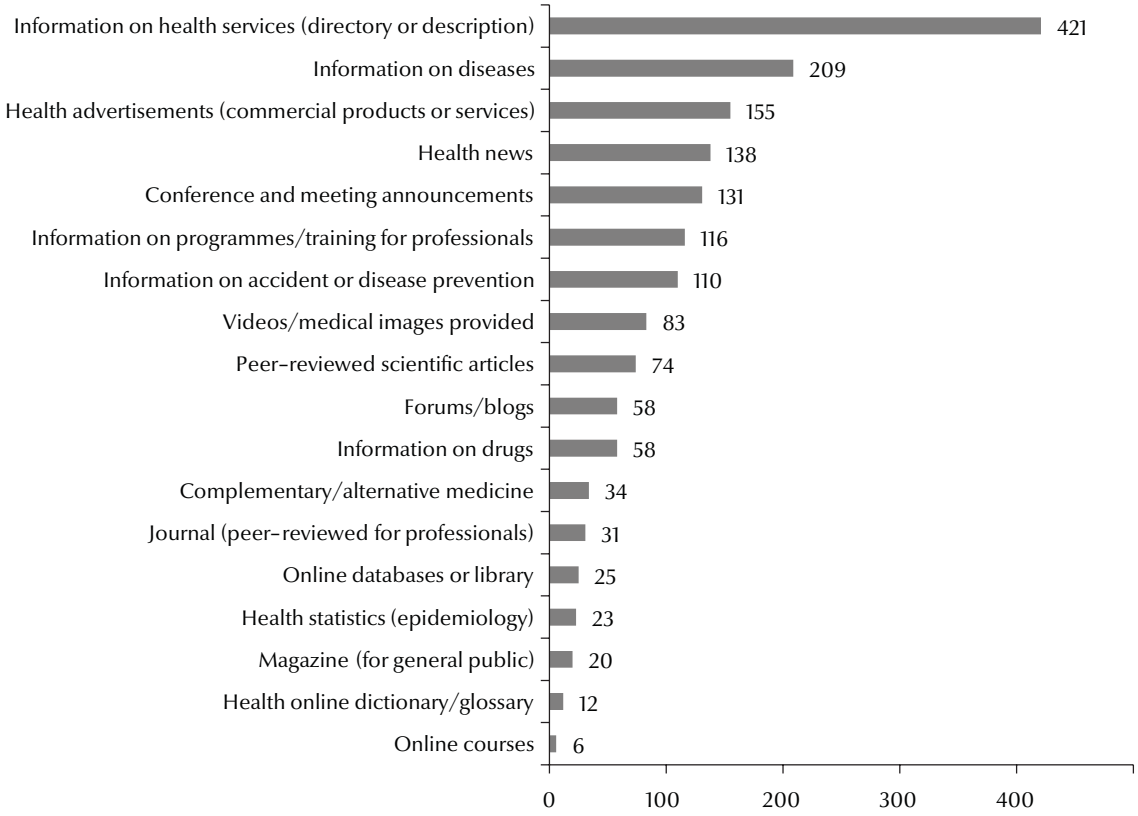

Figure 2 Types of health information on websites originating from Gulf Cooperation Council countries, November–December 2012 (number of sites containing listed information categories)

tities and qualifications of authors of information were revealed.

- Complementarity: 112 sites (12.1%) provided a complementarity statement. Although many websites built from preformatted templates contained a "disclaimer" or "terms of service" link, these pages were often blank or only listed legal restrictions related to copyright infringement, fraud and abuse.
- Privacy: 93 sites (10.1%) disclosed a privacy policy.
- Attribution (date): 541 (58.5%) sites were dated (Figure 3). However, among those that displayed dates and "last updated" statements, most of the information was very current, with the bulk of updates from 2010 to 2012.
- Justifiability: 33 sites (7.2%) referenced claims of the benefits of a therapy, product or service from the peer-reviewed literature.
- Transparency (ownership and contact details): 746 sites (80.6%) provided contact details and 472 sites (51.0%) disclosed ownership.
- Financial disclosure: 217 sites (23.5%) revealed financial sponsorships.
- Advertising policy: 16 sites (1.7%) published an advertising policy.

Discussion

Despite some highly developed, up-to-date and well-maintained informational sites (such as GCC government health portals), serious deficiencies in GCC Internet health information emerged in this study.

Saudi Arabia produced the greatest number of websites among the GCC countries, although a calculation of per capita websites revealed that Bahrain had the highest number of sites per 1000 inhabitants. A majority of websites in GCC countries were in English language; 26.1% were in both Arabic and English and 14.3% were in Arabic. As the native and official language of all Gulf nations is Arabic, all government health information should be provided in Arabic in plain language (i.e. Modern Standard Arabic). A study of Internet information sought by parents of asthmatic children in Riyadh cited "non-availability of Arabic information and highly technical information" as barriers to Internet use (*11*). The new King Abdullah Bin Abdulaziz Arabic Health Encyclopedia (http://www.kaahe.org) may partially alleviate the Arabic language health information deficit (*12*). Only 1 site retrieved in this study was in a language other than Arabic or English, which is surprising due to the widespread use of Hindi, Tamil, Nepali, Urdu and Filipino (Tagalog) among immigrant labourers in

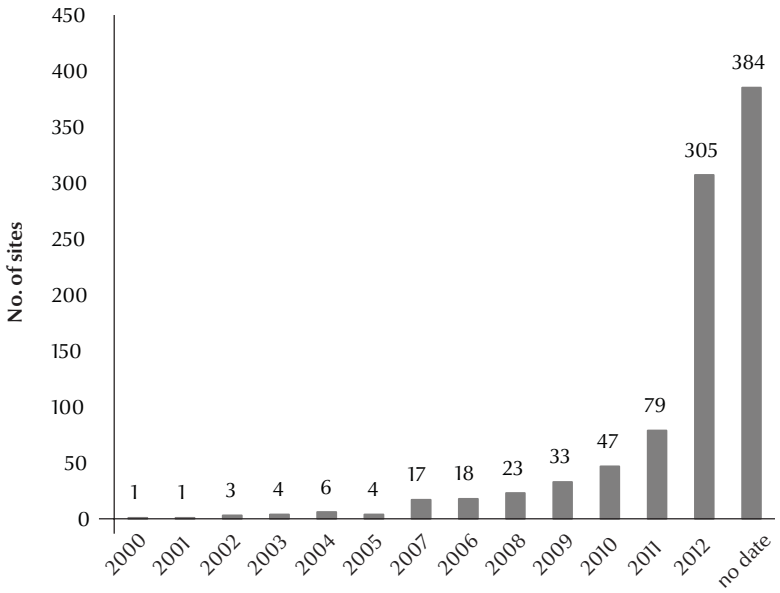

Figure 3 Dates of retrieved websites originating from Gulf Cooperation Council countries, November–December 2012

the region. The GCC has the highest percentage of immigrant labour in the world, approaching 50% of the entire workforce overall, while in Qatar and the UAE it comprises 80–90% of the total workforce (*13*). It can be argued that government health information should be provided in the languages commonly spoken in the Gulf.

Approximately 56% of the GCC Internet health information was commercial in nature. This numerical breakdown of websites provides a somewhat distorted view of health-care delivery in the Gulf, since free or subsidized health-care service information was often organized on large, national health portals. The large number of commercial and private hospital sites was a result of the need for these organizations to advertise and attract paying customers. A low number of academic websites (5.0%) and research centres or institute websites (1.1%) is not unexpected as the GCC countries are developing nations that have only relatively recently established biomedical research output. Health information on the publically accessible Internet in the GCC consisted primarily of information about health services (45.5%) and diseases (22.6%) for lay persons and about development and training opportunities for health-care professionals (conferences 14.2%, training 12.5%).

HON code of conduct for medical and health web sites

Breckons et al. identified 39 different health website rating instruments in 2008, including the eHealth Code of Ethics, HONcode, the eEurope 2002 initiative and Silberg's 4 simple core standards (*14,15*). Assessment agencies and instruments have avoided judging the scientific accuracy of specific information (which can only be determined by trained medical professionals, and they will not always reach consensus), but instead have focused on identifying and verifying the structural and ethical principles of credible website construction.

We believe that the HONcode-based checklist designed for this study will be useful in rapidly assessing a large set of regional (as in this study) or national websites in conjunction with e-health readiness indices or SWOT analyses. The checklist can in addition be used on individual websites to quickly assess if a more detailed rubric needs to be invoked, such as the DISCERN instrument, or a full HONcode site visit. Also, the checklist could easily be automated by programming a web crawler (Internet bot) to retrieve the checklist items.

Applying the 8 checklist principles developed from the HON code of conduct for medical and health web sites revealed that only 5 out of 925 sites fulfilled all of the checklist categories, 3 of which displayed the HONcode credibility seal on their homepage.

Authorship of information revealed

The issue of website information authorship is complex. Although 97.3% of the GCC web information surveyed was anonymous (unattributed), not all reliable and safe health information needs to be attributed or produced by credentialed health practitioners. For example, hospital service hours posted on a website are assumed to be accurate if the hospital is a trusted entity to the user and the website is up to date. Best practices suggest that medical information should be

attributed clearly to an expert author on a website. Information on an individual health practitioner's website might be assumed to have been written by the practitioner him/herself; however, that information could have been cut and pasted from other unidentified sources, generated by the web developer or outsourced to unknown writers. Particularly troubling was the amount of unattributed disease/drug information found on GCC websites. Ideally, technical medical information should be written by an accredited medical professional or scientist citing recent peer-reviewed literature, with links to other credible sources for information comparison. However, very little information on the GCC health sites investigated reached this high standard of credibility.

Complementarity statement

Few websites (12.1%) provided a statement indicating that site information should be used to complement and not replace the advice of a licensed health-care practitioner. When professional medical services are unaffordable or unavailable (as in rural areas), patients may resort to self-diagnosis and self-treatment with over-the-counter medications, prescriptions borrowed from friends or family members, or home remedies based on internet health information. Obviously this can result in great harm to the patient, and ethically health websites should warn readers that they should visit a trained and licensed health-care practitioner if they exhibit any signs or symptoms of serious disease.

Privacy policy disclosed

The GCC health websites examined scored very low on privacy protection, with only 10.1% disclosing a privacy policy. All GCC governments can maintain Internet censorship by routing Internet traffic through government servers to block and filter undesirable websites and possibly maintain surveillance on citizens and expatriates. Anyone gaining unauthorized access to government communication servers, as well as data-centre employees themselves, would have access to all unencrypted Internet traffic in the country, possibly leading to potential abuse or data theft. An individual anonymously posting health information, such as their health status, to a bulletin board, chat room or blog should have the reasonable expectation that all official parties with access to that data will keep the information confidential and private.

Date of last update

A very high percentage of GCC websites (41.5%) were undated. Timeliness of medical and health information is obviously extremely important due to the rapid developments in modern medical knowledge. While out-of-date service hours for clinics, pharmacies or hospitals might only be an inconvenience, out-of-date information on diseases and treatments, e.g. withdrawn drugs, can be dangerous and misleading for both the public and health practitioners.

Justifiability of claims

We adopted strict criteria for claims of the benefits of a therapy, product or service by requiring claims to be referenced by the kinds of standard evidence accepted by health professionals (peer-reviewed articles, reports and clinical trials). Only 7.2% of sites met our criteria. Justifiability is one of the most complex aspects of Internet health since users trust the credibility of information for a variety of reasons: trust in an individual practitioner, trust in an organization or sometimes such superficial factors as graphic presentation (web design "looks professional").

Ownership and funding disclosed

Approximately half of the GCC websites (51.0%) disclosed ownership, although only 23.5% revealed any financial sponsorship, and 80.6% provided contact details, thus exhibiting a high level of transparency. Clearly displaying financial sponsorships, site ownership and providing contact details helps the user to assess any potential fraud or bias of the information displayed on the website. Consumers should be informed as to where the information they are viewing originates, and why it has been made available on the Internet (e.g. altruistically for public education or to sell commercial products). Although many consumers assume that an entity described on a site, e.g. a specific dental or surgical practice is the sponsor, owner or originator of the information, this is not always the case, especially with the rise of third-party sponsored adverts, portals, web directories and aggregators. For greater clarity and establishment of trust, websites should clearly declare who is producing and sponsoring the information.

Advertising policy disclosed

Very few sites in our study (1.7%) published an advertising policy that might reveal conflicts of interest and misleading information. Users at all times should be able to clearly distinguish on the site between peer-reviewed and referenced medical (evidence-based) material provided by the site and advertising information provided for commercial purposes.

Limitations of the study

It was difficult to verify conclusively that all GCC health websites were retrieved, as even a thorough search of a country's complete list of registered site URLs might not reveal all health-related sites without an actual site visit due to such factors as missing or poorly constructed website meta-tags or use of the "noindex" value. Thus searches using common key words with the most frequently used search engine (Google) and following links was adopted as a retrieval strategy since it duplicates actual users' experiences. The low number of non-English and non-Arabic language sites retrieved may have been an artefact of using Arabic/English keyword searches, although we believe that the numbers of these sites in the GCC is quite low. A replication of the study by

another group might result in slightly different typology and checklist percentages due to some subjective bias in the application of categorical definitions selected by the authors; however, the results should be broadly similar.

Conclusions and Recommendations

The study showed that privacy and security policies on websites originating in the GCC need to be implemented and clearly articulated in plain language. Websites should be available in the languages commonly used by people living in the Gulf region, such as Urdu, Tagalog, Nepali, Hindi and Malayalam, and not only in Arabic and English. Technical medical information needs to be dated and cited, and the authorship and credentials of the authors disclosed. Sponsorships, contact details, site ownerships and advertising policies should be disclosed for full transparency. GCC health website owners should consider working with the HON or similar organizations to meet internationally recognized credibility criteria. More research needs to be done concerning actual online health consumer and health professional behaviour, as well as usability and accessibility studies of GCC websites. Language and cultural issues should be the focus of cross-sectional surveys of attitudes.

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Physicians' attitudes towards interaction with the pharmaceutical industry

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مواقف الأطباء من التفاعل مع صناعة المستحضرات الصيدلانية

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الخلاصة: يترتب على العلاقة بين الأطباء وصناعة المستحضرات الصيدلانية آثارٌ أخلاقيةٌ تتعلق برعاية المرضى. وقد تناولت هذه الدراسة معرفة الأطباء العاملين في المملكة العربية السعودية بصناعة المستحضرات الصيدلانية ومواقفهم منها، وارتباط ذلك بسلوكهم الفعلي. ففي دراسة مستعرضة أجريت عام 2012 تم إنشاء سُلَّم (درجات) ذي 100 نقطة من سلم أسئلة ليكرت البالغ عددها 175 نقطة لتقييم المعارف والمواقف. وكان إجمالي الدرجات المحرَزة لـ 659 مشاركاً 63.1 (±8.5)، مع غالبية تحمل موقفاً ايجابياً بشكل عام. وكانت أعلى (أي: أفضل) الدرجات المحرَزة مرتبطة – إلى حد كبير – بعدم وجود تفاعل مع صناعة المستحضرات الصيدلانية وبرفض الهدايا الصيدلانية، وليس بالتربية المتعلقة بالأخلاقيات. وفي تحليل متعدد المتغيرات وُجد أن رفض الهدايا والدخلَ الإضافي والجنسية السعودية ظلت مرتبطة – بشكل مستقل – بإحراز أعلى الدرجات. عموماً، كانت هناك معرفة دون المستوى الأمثل وموقف إيجابي – بشكل عام – من صناعة المستحضرات الصيدلانية لدى هذه العينة من الأطباء في المملكة العربية السعودية.

ABSTRACT The relationship between physicians and the pharmaceutical industry has ethical implications for patient care. This study examined knowledge and attitudes towards the pharmaceutical industry, and associations with actual behaviour, among physicians working in Saudi Arabia. In a cross-sectional study in 2012, a 100-point score was created from 17 5-point Likert-scale questions to assess knowledge and attitudes. The overall score of 659 participants was 63.1 (SD 8.5), with a majority holding a generally positive attitude. Higher (i.e. better) scores were significantly associated with a lack of interactions with the pharmaceutical industry and with refusal of gifts but not with education about ethics. In multivariate analysis, refusing gifts, additional income and Saudi nationality remained independently associated with higher scores. Overall, there was suboptimal knowledge and a generally positive attitude towards the pharmaceutical industry among the sample of physicians in Saudi Arabia.

Attitudes des médecins par rapport à l'interaction avec l'industrie pharmaceutique

RÉSUMÉ Les relations entre les médecins et l'industrie pharmaceutique ont des implications éthiques pour les soins aux patients. La présente étude a examiné les connaissances et les attitudes envers l'industrie pharmaceutique, ainsi que les associations avec les comportements réels chez des médecins exerçant en Arabie saoudite. Dans une étude transversale menée en 2012, un score sur 100 a été créé à partir de 17 questions sur une échelle de Likert en 5 points visant à évaluer les connaissances et les attitudes. Le score global des 659 participants était de 63,1 (ET 8,5), la majorité ayant généralement une attitude positive. Les scores les plus élevés (c'est-à-dire les meilleurs scores) étaient nettement associés à une absence d'interactions avec l'industrie pharmaceutique et le refus de cadeaux, mais n'étaient pas liés à une formation sur l'éthique. À l'analyse multivariée, le refus de cadeaux, des revenus supplémentaires ainsi que la nationalité saoudienne étaient des facteurs indépendamment associés à des scores plus élevés. Globalement, les connaissances étaient sous-optimales et l'attitude envers l'industrie pharmaceutique était généralement positive au sein de l'échantillon de médecins répondeurs en Arabie saoudite.

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Introduction

There is accumulating evidence from different parts of the world indicating that nearly all physicians maintain some sort of relationship with the pharmaceutical industry (*1–3*). This relationship may be seen as beneficial to patients, as physicians and the pharmaceutical industry have common interests in conducting research and developing new, safe and effective medications (*4*). On the other hand, the relationship may be seen as harmful to patients, due to the conflict of interest between the physician, whose primary interest is patients' welfare, and the pharmaceutical industry, which has a primary interest in maximizing profits for shareholders (*4,5*). This raises numerous ethical questions about the appropriateness of physicians' accepting gifts, the degree of transparency and disclosure of received benefits, the impact on health-care costs, influences on health-care decisions, the effect on the research agenda and its results, and the impact on the physician–patient relationship (*6–8*).

The attitude of physicians towards their relationship with the pharmaceutical industry has been examined in a number of studies (*9–11*) and the possibility that such a relationship may influence physicians' clinical decision-making has been also examined (*12*). However, there are limited data linking physicians' knowledge and attitude with their own behaviour towards the pharmaceutical industry. Moreover, studies examining the attitude of physicians towards the relationship are completely lacking in Saudi Arabia. The objective of the current study was to examine knowledge and attitudes towards the pharmaceutical industry among physicians working in Saudi Arabia, including accepting gifts, ethical issues, influence on clinical decisions and accuracy of information provided. Additionally, the study aimed to examine the association of such knowledge and attitudes with physicians' own behaviour towards any sort of interaction with the pharmaceutical industry and accepting pharmaceutical company gifts.

Methods

Study design and setting

A cross-sectional study was carried between March and July 2012. The study obtained all required ethical approvals from the institutional review board at the Faculty of Medicine at King Saud University, Riyadh, Saudi Arabia.

Approximately 80% of the health-care services in Saudi Arabia including prescriptions are provided free of charge by the government (*13*). The private sector provides fee-paid services and is considered a more easily accessible sector compared with the government sector. However, the cost is largely covered by private employers who are required by law to provide free insurance to their employees (*13*).

Population

The current study was conducted among physicians working in secondary- and tertiary-care hospitals in Saudi Arabia. All ranks of physicians of both medical and surgical specialties were included. Samples were recruited from 10 hospitals (both government and private) in the Central, Eastern, Western, Northern and Southern regions of Saudi Arabia. Medical students and other health-care workers were excluded. Physicians without patient care responsibilities were excluded.

We estimated that 631 participants were required to detect a 20% difference in attitude towards the pharmaceutical industry (for example, 50% versus 30%) between 2 levels of a given characteristics (such as having or lacking medical education), at 95% confidence level and 80% power.

Because of the difficulty of getting rosters of working physicians for each hospital, we recruited the required sample size from the physicians available at the time of the study (convenience sample). We distributed 1000 questionnaire in both paper (75%) and electronic (25%) formats and obtained 663 responses. Four questionnaires were excluded due to lack of interaction questions, leaving 659 for analysis. Informed consent was obtained from all participants after explanation of the study objectives.

Data collection tool

A self-administrated questionnaire was developed and administered to all participants. It first asked about the sociodemographic, economic and occupational characteristics of the study participants. The questionnaire then assessed outcome variables, including history of any interaction with pharmaceutical sales representatives, the physician's acceptance of pharmaceutical company gifts and any ethics education received. Pharmaceutical company gifts in the current study were described in the questionnaire as stationery items, free drug samples, free meals, financial support to attend educational activities, funding for research and prepaid promotion cards/codes. The participants were asked to answer 17 questions to assess their knowledge and attitude towards gifts, medical ethics, influences on care decisions and the accuracy of information given by pharmaceutical sales representatives about new pharmaceutical medications. Ten of these questions were general and were answered by everyone, while 7 questions were answered only by those who had a history of actual interactions with pharmaceutical sales representatives. The content of the questionnaire was validated by a multidisciplinary committee covering ethics, psychiatry, pharmacy and epidemiology. The questionnaire was then piloted on a small number of participants (n = 16) before widespread distribution. The wording and suggested answers were modified for some questions based on the feedback from the pilot sample. The internal

consistency of the questionnaire items was examined using Cronbach alpha (with a value of 0.55).

Data analysis

Data were presented using frequencies and percentages for categorical data and mean and standard deviation (SD) for continuous data. Knowledge and attitude questions were presented as frequencies and percentages. Questions were answered using 5-point Likert scales. For the majority of questions, strongly agree/always was assigned a score of 5 and strongly disagree/never was assigned a score of 1. A few questions were worded in the opposite direction and so scored in the opposite direction with strongly disagree/never assigned a score of 5 and strongly agree/always assigned a score of 1 (Table 1). Overall or group scores were calculated by summing the individual scores of their items (10 general questions, 7 interaction questions and overall score). Scores were then transformed into 100-point scales with 100 = best knowledge and attitude and 20 = worst knowledge and attitude. Significant differences in transformed scores by sociodemographic, occupations and outcome characteristics were examined using *t*-test or 1-way analysis of variance (ANOVA), as appropriate. Mean scores by outcome variables adjusted for significant associates were created using general linear model regression analysis. All *P*-values were 2-tailed. *P*-value < 0.05 was considered as significant. *SPSS* software, version 20.0, was used for statistical analyses.

Results

Data from 659 participants were analysed. Approximately three-quarters of the participants (74.5%) were male and the average age was 38.2 (SD 10.0) years. More than half (54.9%) of the participants were Saudi Arabian nationals and less than a third (30.8%) had received medical education outside the region, in North America, western Europe or Australia. The most commonly reported monthly income (41.5%) was between US$ 2700 and US$ 5200.

Physicians' knowledge and attitudes towards pharmaceutical companies and representatives

A total 659 participants answered the questions about knowledge and attitudes to pharmaceutical company

Table 1 Responses to questions about the pharmaceutical industry in general among the study physicians (*n* = 659)

Item	Total	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	No.	No.	%	No.	%	No.	%	No.	%	No.	%
Accepting pharmaceutical company gifts will affect my decision regarding the use of certain medications or surgical instruments	654	85	13.0	119	18.2	109	16.7	127	19.4	214	32.7
Doctors in my institution accept pharmaceutical company gifts	645	113	17.5	219	34.0	193	29.9	82	12.7	38	5.9
In general, the decisions of other physicians regarding the use of certain medications or surgical instruments are influenced after receiving pharmaceutical company gifts	648	53	8.2	151	23.3	237	36.6	134	20.7	73	11.3
It is ethical to accept pharmaceutical company gifts[a]	646	25	3.9	80	12.4	222	34.4	151	23.4	168	26.0
Pharmaceutical companies should be banned from giving gifts to physicians	641	137	21.4	142	22.2	204	31.8	112	17.5	46	7.2
Patients should be informed about the gifts given to their doctors by drug companies	641	68	10.6	96	15.0	148	23.1	165	25.7	164	25.6
Pharmaceutical sales representatives always provide accurate information about their new medications[a]	647	42	6.5	133	20.6	206	31.8	188	29.1	78	12.1
Receiving details from pharmaceutical sales representatives increases my preference for prescribing the promoted drug	645	41	6.4	178	27.6	219	34.0	144	22.3	63	9.8
Drug information from pharmaceutical sales representatives influences my informed decision to prescribe	649	35	5.4	151	23.3	217	33.4	161	24.8	85	13.1
Drug information from other sources is more important and reliable than information from pharmaceutical sales representatives	655	243	37.1	199	30.4	152	23.2	45	6.9	16	2.4

[a] *Questions were scored in the opposite direction.*

representatives in general (Table 1). More than half (52.1%) of the participants disagreed that accepting pharmaceutical company gifts could affect their own decisions, but a much lower percentage (32.0%) disagreed that accepting pharmaceutical company gifts could affect the decisions of other physicians (Table 1). Only a small percentage (16.3%) of the participants thought it was ethical to accept pharmaceutical company gifts and 43.6% agreed that pharmaceutical companies should be banned from giving gifts to physicians. More than half (51.6%) of the participants disagreed that patients should be informed about the gifts given to their doctors by drug companies. About 41.2% of the participants disagreed that pharmaceutical sales representatives always provided accurate information about their new products. Participants were equally divided (34.0% agree and 32.1% disagree) about whether receiving details from pharmaceutical sales representatives would increase their preference for prescribing the promoted drug. About 37.9% of the participants disagreed that drug information from pharmaceutical sales representatives influenced their decisions and the majority of the participants (67.5%) believed that drug information from other sources was more important and reliable than from pharmaceutical sales representatives.

Physicians' experiences with pharmaceutical sales representatives

Physicians were who had ever met pharmaceutical industry representatives (n = 460) answered questions about their experience of these interactions (Table 2). The majority (75.2%) of the physicians agreed that pharmaceutical representatives frequently (usually or always) used the word "safe" when they described their products (Table 2). Less than a quarter of the participants thought that pharmaceutical representatives frequently (always or usually) mentioned the drug's interactions (19.7%), adverse effects (20.4%) and price (23.6%) without being asked. The majority of the participants believed that representatives were sometimes convincing (54.4%). The majority of the participants admitted they had frequently (29.7%) or at least sometimes (30.8%) been requested by representatives to try a new medicine on their patients.

Mean overall knowledge and attitude scores

The mean overall knowledge and attitude score was 63.1 [standard deviation (SD 8.5)]. Similarly, the mean score for the general questions was 62.8 (SD 10.1) and for the interaction questions was 63.0 (SD 9.1). The knowledge and attitudes scores according to participants' sociodemographic and occupational characteristics are shown on Tables 3 and 4 respectively. Since the 3 scores were very close and had the same pattern of associations with almost all the studied variables, we will restrict this description to the overall score.

There were inverse associations between the overall score and participants' age, as evidenced by the higher score with younger age and shorter work duration ($P < 0.001$ for each). Participants of Saudi Arabian nationality had a significantly higher overall score than non-Saudis ($P < 0.001$). The overall score was significantly higher among

Table 2 Responses to questions about interaction with the pharmaceutical industry among the study physicians with experience of pharmaceutical sales representatives (n = 460)

Item	Total	Always		Usually		Sometimes		Rarely		Never	
	No.	No.	%	No.	%	No.	%	No.	%	No.	%
Pharmaceutical sales representatives use the word "safe" when they describe their products	457	146	31.9	198	43.3	88	19.3	16	3.5	9	2.0
Spontaneously, pharmaceutical sales representatives mention the drug interactions[a]	453	13	2.9	76	16.8	160	35.3	159	35.1	45	9.9
Spontaneously, pharmaceutical sales representatives mention the adverse effects[a]	456	20	4.4	73	16.0	168	36.8	154	33.8	41	9.0
Spontaneously, pharmaceutical sales representatives mention the price[a]	445	27	6.1	78	17.5	139	31.2	148	33.3	53	11.9
Pharmaceutical sales representatives are ready to answer my questions[a]	448	87	19.4	204	45.5	130	29.0	20	4.5	7	1.6
Pharmaceutical sales representatives are convincing	447	28	6.3	114	25.5	243	54.4	46	10.3	16	3.6
I receive encouragement from pharmaceutical sales representatives to try new medicines on my patients	454	36	7.9	99	21.8	140	30.8	75	16.5	104	22.9

[a] *Questions were scored in the opposite direction.*

those working in public hospitals ($P < 0.001$) and among those with additional income ($P < 0.001$). Participants with monthly income US$ 2700–5200 had a significantly lower overall score than other groups ($P = 0.024$). There were no significant differences in the overall scores by physician's sex, medical education, clinical specialty, job rank or work history.

Associations of physicians' characteristics with overall knowledge and attitude scores

We examined the associations between the overall knowledge and attitude score and the study outcome variables. The participants with previous experience of interacting with pharmaceutical sales representatives ($n = 460$) had a higher overall mean score than those with no previous interaction ($n = 199$) [64.7 (SD 10.0) versus 62.5 (SD 7.8)] ($P = 0.004$). Similarly, the participants who did not accept pharmaceutical company gifts ($n = 69$) had a higher overall score than those who accepted them ($n = 383$) [65.2 (SD 9.0) versus 61.9 (SD 7.4)] ($P = 0.001$). Participants who reported having some type of education (lectures, workshops, etc.) about the ethics of interactions with the pharmaceutical industry ($n = 341$) had a slightly higher overall score than those who did not have such education ($n = 289$). However, the difference did not reach statistical significance [63.8 (SD 9.2) versus 62.8 (SD 7.7)] ($P = 0.151$).

In multivariate analysis, adjusting for the above outcome variables as well as the variables associated with the overall score in univariate analysis (Tables 3 and 4) including age, nationality, type of hospital, working duration and additional income, it was found that refusing gifts (model coefficient $\beta = 2.25$, $P = 0.037$), having additional income ($\beta = 3.42$, $P = 0.001$) and Saudi nationality ($\beta = 3.37$, $P < 0.001$) were independently associated with a higher overall knowledge and attitude score.

Discussion

We report here the knowledge and attitudes towards the pharmaceutical industry of a group of physicians of different clinical specialties and job ranks working in Saudi Arabia and the associations with their own behaviour. The current findings showed a generally positive attitudes towards interactions with the pharmaceutical industry. Similarly, a thematic review of studies examining the attitudes and knowledge towards the pharmaceutical industry between 1996 and 2004 showed that a substantial numbers of physicians found interactions with pharmaceutical industry representatives to be appropriate, important, beneficial or ethical and felt that they should be permitted (*14*). Similar findings were replicated in more recent studies in developed (*2,9,15*) and developing countries (*16*). Although less than half of physicians in the current study

Table 3 Mean knowledge and attitudes scores according to the sociodemographic and educational characteristics of the study physicians

Characteristic	General questions		Interaction questions		All questions	
	No.	Mean (SD)	No.	Mean (SD)	No.	Mean (SD)
Sex						
Male	165	63.0 (10.4)	115	63.0 (8.9)	165	63.2 (8.6)
Female	483	62.8 (9.5)	335	63.2 (9.5)	483	63.0 (8.3)
		$P = 0.808$		$P = 0.838$		$P = 0.828$
Age (years)						
20–29	149	65.0 (8.1)	59	63.2 (8.6)	149	64.9 (7.8)
30–39	230	63.2 (10.9)	176	64.2 (9.0)	230	63.7 (9.1)
40–49	154	62.3 (10.8)	120	63.1 (9.5)	154	62.6 (8.9)
≥ 50	107	60.1 (9.6)	90	60.4 (8.8)	107	60.2 (7.3)
		$P < 0.001$		$P = 0.014$		$P < 0.001$
Nationality						
Saudi	352	65.7 (10.4)	218	65.0 (9.9)	352	65.6 (9.1)
Non-Saudi	289	59.8 (8.6)	227	61.3 (7.9)	289	60.4 (6.7)
		$P < 0.001$		$P < 0.001$		$P < 0.001$
Medical education[a]						
Non-local	187	64.0 (12.0)	149	63.1 (9.7)	187	63.9 (9.6)
Local	421	62.9 (9.4)	272	63.6 (8.9)	421	63.3 (8.1)
		$P = 0.211$		$P = 0.570$		$P = 0.483$

[a]*Non-local: North America, western Europe or Australia; local: Saudi Arabia or elsewhere in the Middle East.*
SD = standard deviation.

Table 4 Mean knowledge and attitudes scores according to the occupational characteristics of the study physicians

Characteristics	General questions		Interaction questions		All questions	
	No.	Mean (SD)	No.	Mean (SD)	No.	Mean (SD)
Type of hospital						
Public	471	63.9 (10.1)	304	63.9 (9.2)	471	64.1 (8.6)
Private	111	59.1 (8.6)	99	61.2 (7.9)	111	59.8 (6.9)
Both	50	62.1 (11.9)	47	61.5 (9.2)	50	62.2 (9.0)
		$P < 0.001$		$P = 0.016$		$P < 0.001$
Clinical specialty						
Psychiatry	114	63.9 (10.2)	89	64.6 (8.8)	114	64.6 (8.9)
Family medicine	78	64.0 (12.0)	62	65.7 (9.3)	78	64.5 (9.6)
Surgery	70	61.8 (10.9)	49	64.1 (9.3)	70	62.2 (8.2)
Internal medicine	75	62.9 (9.4)	53	59.7 (9.8)	75	61.9 (7.5)
Paediatrics	60	61.0 (9.0)	49	65.3 (7.9)	60	62.4 (7.5)
Orthopaedics	42	61.1 (8.4)	33	61.7 (9.7)	42	61.4 (7.0)
Other	198	62.4 (9.2)	116	61.2 (8.0)	198	62.6 (8.0)
		$P = 0.357$		$P < 0.001$		$P = 0.094$
Job rank						
Consultant	175	63.6 (12.4)	136	64.1 (9.7)	175	63.8 (10.4)
Specialist/registrar	187	61.6 (10.0)	154	62.7 (8.9)	187	62.1 (7.9)
Resident/intern	226	63.6 (8.1)	121	62.2 (8.6)	226	63.5 (7.3)
Other	14	62.2 (13.0	10	59.4 (6.6)	14	62.2 (11.0)
		$P = 0.158$		$P = 0.198$		$P = 0.248$
Work duration (years)						
0–9	294	64.1 (9.5)	166	64.0 (8.8)	294	64.3 (8.4)
10–19	193	62.7 (11.4)	158	63.6 (9.6)	193	63.1 (9.4)
20–29	113	61.2 (9.4)	90	61.0 (8.5)	113	61.0 (7.0)
≥ 30	39	58.3 (9.2)	35	61.7 (9.3)	39	59.5 (7.3)
		$P < 0.001$		$P = 0.058$		$P < 0.001$
Monthly income (US$)						
< 2700	107	63.8 (8.2)	39	59.8 (6.8)	107	63.4 (7.2)
2700–5200	266	61.7 (9.4)	196	62.3 (8.3)	266	62.2 (7.6)
5300–7900	110	62.5 (10.4)	83	64.3 (9.6)	110	63.5 (9.5)
≥ 8000	158	65.2 (11.9	130	64.2 (10.2)	158	64.8 (9.9)
		$P = 0.005$		$P = 0.019$		$P = 0.024$
Additional income[a]						
No	509	62.2 (9.7)	352	62.5 (8.8)	509	62.5 (8.2)
Yes	143	65.4 (11.3)	103	65.0 (9.6)	143	65.2 (9.2)
		$P < 0.001$		$P = 0.013$		$P < 0.001$
Work history[b]						
Non-local	119	62.8 (10.6)	97	63.7 (8.3)	119	63.3 (8.5)
Local	482	63.3 (10.1)	316	63.5 (9.4)	482	63.6 (8.7)
		$P = 0.608$		$P = 0.860$		$P = 0.756$

[a]Additional income: income obtained from outside the hospital due to academic, medical or non-medical activities.
[b]Non-local: work experience in North America, western Europe or Australia; local: worked in Saudi Arabia or Middle East.
SD = standard deviation.

supported banning pharmaceutical company gifts and only a quarter supported disclosing received gifts to their patients, the majority of them did not find it ethical to accept pharmaceutical company gifts. This may reflect a limited awareness of the impact of interactions or unacknowledged bias due to conflicts of interest (*17*).

Despite data that has linked accepting gifts to the prescribing behaviour of physicians (*12*), the influence on clinical decisions is often unacknowledged by many physicians who believe they can adequately evaluate and filter information presented to them by pharmaceutical sales representatives (*14,17*). Physicians in the current study tended to ignore the impact of accepting pharmaceutical company gifts and receiving details from pharmaceutical sales representatives on their own clinical decisions. Interestingly, they also underestimated the influence on themselves compared with their colleagues. Similarly, a number of studies showed that physicians and nurses believed they are more immune to industry influence than their colleagues are (*14,15,18*). As in other studies in developed and developing countries, the majority of physicians in the current study had doubts about the accuracy of drug safety information provided by pharmaceutical sales representatives (*16,19,20*). Supporting our finding about physicians' trust in non-pharmaceutical representative sources, it has been shown that physicians believed that practice guidelines, peer-reviewed evidence and opinions of local physician experts are important counterweights to the influence of pharmaceutical sales representatives (*21*).

The knowledge and attitude scores in the current study were transformed into 100-point scales for easy interpretation. Since the overall score was 63, this may roughly indicate a suboptimal level of information among the studied physicians. Although we have reported some sociodemographic, occupational and behavioural factors significantly associated with knowledge and attitudes, the absolute differences rarely exceeded 5 points. However, these small differences between factor groups were the average of much bigger differences in individual questions, sometimes in opposite directions. For example, those who accepted gifts were 50% less likely to believe that gift acceptance was unethical but 15% more likely to deny the influence on their decisions.

As expected, better knowledge and attitudes about interactions with the pharmaceutical industry in the current study were associated with refusal of pharmaceutical company gifts. This may indicate the importance of good knowledge and correct attitudes about interactions with the pharmaceutical industry. It has been shown that education and discussion about the ethical issues related to exposure to pharmaceutical representatives can improve the attitudes of residents and medical students towards interactions (*22–25*). Interestingly, knowledge and attitudes about interactions with the pharmaceutical industry in the current study was not significantly associated with having received ethics education. While this may be difficult to explain, it may simply indicate inadequate or insufficient ethics education offered to the studied physicians. These educational activities were predominantly in the form of lectures, limiting the role of more interactive educational activities. It has been shown that active learning strategies such as brainstorming sessions, role plays and group activities were effective in improving the knowledge, attitudes and skills of medical students about pharmaceutical promotion (*26*).

The current study had many advantages: bridging the local knowledge gap about attitudes towards interactions with pharmaceutical industry, surveying a relatively large number of physicians across several specialties and linking the knowledge and attitudes with behaviours. Nevertheless, we acknowledge a number of limitations. Being based on a convenience sample, the results should be generalized with caution and should not be regarded as representative of all physicians working in Saudi hospitals. Being a self-reported study, the possibility of reporting bias concerning attitudes or underestimation of interactions with the pharmaceutical industry cannot be excluded. The questionnaire in its final version had a poor indicator for internal consistency of its items (as indicated by an overall Cronbach alpha value of 0.55). Therefore, the reliability of the questionnaire can be doubted and the findings should be interpreted with caution, reflecting the need of a standard questionnaire to assess physicians' attitudes towards the pharmaceutical industry.

In conclusion, we report suboptimal knowledge and a generally positive attitude towards the pharmaceutical industry among a group of physicians working in Saudi Arabia. As the majority of physicians were in the habit of accepting gifts, the majority found it ethical to interact with the pharmaceutical industry representatives and tended to overlook any potential influences on clinical decision-making. Better knowledge and attitudes in the current study were independently associated with refusal of pharmaceutical company gifts, additional income and Saudi nationality. Improving the knowledge and attitudes of physicians may reduce the frequency of their interactions and influences from the pharmaceutical industry. Active learning strategies about appropriate industry interactions and awareness of local governing policies should be included in medical school curricula and residency training programmes.

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Medical faculty members' perspectives on the components of cross-cultural competence in the Islamic Republic of Iran: a qualitative study

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وجهات نظر أعضاء هيئة التدريس الطبي حول مكونات الكفاءة العابرة للثقافات في جمهورية إيران الإسلامية: دراسة كيفية

مجتبى موسوي بزاز، عاطفة ذبيحي ززولي، حسين كريمي مونقي

الخلاصة: على الرغم من أهمية الكفاءة الثقافية في مجال الرعاية الصحية فإنه لم يكن هناك أي بحث لوضع إطار للكفاءة الثقافية في السياق الإيراني. وقد هدفت هذه الدراسة الكيفية في جامعة مشهد للعلوم الطبية إلى استجلاء آراء أعضاء هيئة التدريس الطبي عن مكونات الكفاءة العابرة للثقافات ومقارنة هذه الدراسة مع دراسات مشابهة نشرت باللغة الإنجليزية. وباستخدام مزيج من دراسات أرشيفية ومقابلات شبه منظمة ومناقشات جماعية مركزة بين أعضاء هيئة التدريس تم تحديد 3 مجالات رئيسية (المعارف والمواقف والسلوك) و21 مكوِّناً لوصف الكفاءة العابرة للثقافات بين أعضاء هيئة التدريس في كليات الطب. وعبَّر المشاركون عن أهمية المعرفة – كخطوة تمهيدية – في تغيير المواقف ومكونات المعرفة الستة المتعلقة بمعرفة وإدراك قيم ومعتقدات وأعراف الجماعات الإثنية والعرقية والثقافية المختلفة. وأكد معظم الخبراء على أهمية التفاعل بين أعضاء هيئة التدريس وبين المراجِعين (الطلاب والمرضى).

ABSTRACT Despite the importance of cultural competence in health care, there has been no research to develop a framework for cultural competence in the Iranian context. This qualitative study at Mashhad University of Medical Sciences aimed to elucidate the views of medical faculty staff on the components of cross-cultural competence and compare these with similar studies published in English. Using a combination of archival studies, semi-structured interviews and focus group discussions among faculty members 3 major domains (knowledge, attitude and behaviour) and 21 components were identified to describe the cross-cultural competence of faculty members in medical schools. Participants expressed the importance of knowledge as a precursor to changing attitudes and the 6 knowledge components related to knowledge and awareness of values, beliefs and norms of different ethnic, racial and cultural groups. Experts mostly emphasized the importance of interaction between faculty members and clients (students and patients).

Points de vue des membres de la faculté de médecine sur les composantes de la compétence interculturelle en République islamique d'Iran : étude qualitative

RÉSUMÉ Malgré l'importance de la compétence culturelle en soins de santé, il n'existe pas de recherche visant à établir un cadre pour la compétence culturelle dans le contexte iranien. La présente étude qualitative à l'Université des sciences médicales de Mashhad visait à élucider les points de vue du personnel de la faculté de médecine sur les composantes de la compétence interculturelle et à les comparer à des études similaires publiées en langue anglaise. À l'aide d'une association d'études d'archives, d'entretiens semi-structurés et de groupes de discussions thématiques impliquant les membres de la faculté, trois domaines principaux (les connaissances, les attitudes et les comportements) ont été dégagés et 21 composantes ont été identifiées pour décrire la compétence interculturelle à acquérir par les membres des facultés de médecine. Les participants ont insisté sur l'importance des connaissances comme élément précurseur permettant une évolution des attitudes et sur les six composantes dans ce domaine liées à la connaissance des valeurs, des croyances et des normes dans différents groupes ethniques, raciaux et culturels et à la sensibilisation en la matière. Les experts ont surtout souligné l'importance de l'interaction entre les membres de la faculté et les clients (les étudiants et les patients).

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Introduction

The cultural competence movement began almost 20 years ago (*1*). Although there is currently no standardized definition of cultural competence, Cross et al.'s definition is the most commonly cited (*2*). This defines cultural competence as "a set of congruent behaviours, attitudes, and policies that come together in a system, agency, or among professionals and enables that system, agency, or those professionals to work effectively in cross-cultural situations" (*3*). Three major areas of health research provide a context that addresses the importance of culturally competent care: health disparities; access to health care; and quality of care (*4*). In the context of health care, the components of cultural competence bridge the cultural gap that exists between providers and patients (*5*) and play a critical role in reducing health disparities and improving health outcomes for patients (*6*). When care is provided that takes patients' values and beliefs into account, it is likely to result, for example, in better access to health care and increased compliance with medication by patients (*7*). Conversely, a lack of cultural competence among health-care providers may lead to patient dissatisfaction (*8*).

The Islamic Republic of Iran has many ethnic and religious groups which have a variety of subcultures, languages, lifestyles, customs, traditions and different modes of livelihood (*9–11*). Nowadays, foreign migrants too constitute a large part of the country's population (*12*) and providing education for the increasing number of foreign students in the country has become an important issue in higher education (*13*). The cultural diversity of Iranian society raises challenges for the health-care system in trying to serve patients of diverse languages and cultures. Research in the Islamic Republic of Iran shows that beliefs about health care and people's perceptions of illness and health vary across ethnic and religious groups (*9,14*).

Despite its long tradition in disciplines such as psychology, it is only within the past decades that cultural competence has been studied in the context of health and become integrated into the medical education curriculum (*15*). In the educational realm, cultural competence has been defined as "the ability to successfully teach students who come from different cultures other than your own" (*16*). In their book, Diller and Moule stated that it entails developing certain personal and interpersonal awareness and sensitivities, developing certain bodies of cultural knowledge and mastering a set of skills that, taken together, underlie effective cross-cultural teaching (*17*). The available evidence on multicultural education addressing ethnic and religious diversity highlights the importance of providing cultural competence education and assessment of faculty staff members in the Islamic Republic of Iran. Faculty members act as role models and prepare their students to deliver culturally competent care (*6*). Yet cultural diversity poses a pedagogical and social challenge to educators (*18*); at all levels, they must develop cultural knowledge, awareness and sensitivity to help diverse learners (*19*).

Despite the clear importance of cultural competence in health care, there has been no research to develop a framework to specify the components of cultural competence in the Iranian context. The purpose of this study was to elucidate medical faculty members' perspectives on the components of cultural competence applicable to medical schools and how these compare with those found in the English language literature.

Methods

Study design and participants

Between October 2012 and September 2013, the authors conducted a qualitative study in Mashhad University of Medical Sciences. Since there was no existing framework for cultural competence of faculty members in the Islamic Republic of Iran, we used an inductive and exploratory approach to understand the dimensions of cultural competence. We therefore chose a combination of methods, including archive study, semi-structured interviews and focus group discussions (FGD) to combine evidence and the collective perspective of experts. In the archive study, we reviewed the current evidence to identify the existing components of cultural competence and then we completed these components by semi-structured interviews and FGDs.

To obtain a range of perspectives on cultural competence, we recruited participants who were faculty members and educational experts at Mashhad University of Medical Sciences, who had had more than 15 years of experience in teaching, research and service and who were considered as role models in the university. The participants were selected through purposeful sampling (unique cases) and later on by snowball sampling. The inclusion criteria for the participants were having expertise in medical science, teaching and being active in medical education and ethics. Participants unwilling to participate were excluded. We invited 21 faculty members who had valuable educational experiences to participate in this study; 15 of them expressed their readiness to participate in FGDs and the remaining 6 faculty members were given individual interviews to accommodate their busy schedules,.

Data collection

Table 1 summarizes the study steps and the participants at each stage.

Step 1: archive study

We reviewed the published literature and frameworks to identify the existing components of cultural competency. Between October 2012 and April 2013, we searched the databases

Table 1 Outline of the study steps and participants

Sequence of steps	Aim of step	Participants	Activities conducted	Results
Step 1: archive study	To identify the existing components of cultural competence	Researchers	Searching databases, surveying articles and documents, identifying existing components during 40 discussion sessions	20 components in 3 domains were identified relating to cultural competence of faculty members in medical schools
Step 2: interviews	To identify the new components of cultural competence	Researchers & 6 faculty members	Conducting 6 interviews, analysing data and eliciting new components	After deleting duplicate components, 5 new components were added
Step 3: first FGD	To identify the new components of cultural competence	Researchers & 14 faculty members	Conducting FGDs, brain-storming and summarizing findings	After deleting duplicate components, 3 new components were added
Step 4: questionnaire	To determine the importance of each component (scoring round)	Researchers & 21 faculty members	Scoring the components	Mean score of all the components was > 5
Step 5: second FGD	To finalize the components	Researchers & 8 faculty members	Preparing the final framework	21 components in 3 domains were agreed to define the cultural competence of faculty members in medical schools

FGD = focus group discussion.

of *Google Scholar, ScienceDirect, PubMed, ProQuest, OvidMD, Education Resources Information Center (ERIC), WhereIsDoc, OhioLINK* electronic theses and dissertation centre, the Iranian databases *Magiran* and *Scientific Information Database (SID)*, and the website of the Iranian Council of Cultural Revolution, with no specific time span to limit the search. The keywords used were: cultural competence, multicultural education, framework AND cultural competence, components of cultural competence, cultural competence AND faculty members, cultural competence AND medical science. We also consulted the databases of colleges and associations and publications from government and nongovernmental organizations including the Association of American Medical Colleges; the National Center for Cultural Competence (an initiative based at the Georgetown University Center for Child and Human Development); and the Liaison Committee on Medical Education (an accrediting body for educational programmes at schools of medicine in America and Canada). The publications and documents were mostly in English language. Articles were included if they were available as full texts; were written in English; reflected the components, elements or domains of cross-cultural competence; and were applicable to faculty members of a medical school. The identified articles were then screened and assessed for eligibility according to the inclusion criteria. The included articles were critically appraised with an assessment tool for descriptive and qualitative articles by 2 of researchers (M.M. and A.Z.). Another researcher (H.K.) moderated in the case of disagreement.

Based on their content and purpose, the aggregated results were classified into 3 categories related to the importance of cultural competence, education about cultural competence and assessment of cultural competence. This was done by the researchers in 12 discussion sessions lasting on average 2 hours. Afterwards, 112 components were extracted by reviewing the obtained data, extracting key phrases and organizing concepts and meaning through 28 discussion session lasting on average 3 hours. Components that had similar meanings were combined and duplicate components were removed. Finally, 20 components in 3 domains—knowledge, attitude and practice—were identified as suitable for defining the cultural competence of faculty members in the medical school. The components were developed in Persian language and translated into English for reporting purposes.

Step 2: interviews

The semi-structured interviews were conducted with 6 faculty members. For consistency we used a single interviewer (A.Z.), although all the researchers participated in developing the interview guide. Interviews were tape-recorded if the respondent agreed. If the respondent did not agree the interviewer took notes and dictated the responses as close

to verbatim as possible immediately following the interview. Each interview lasted approximately 30 minutes and was scheduled at a time and place that was convenient for the interviewee. We continued data collection until theoretical saturation was reached. We used the archive study to design the interview questions, which included items covering the domains and components of cultural competence.

Step 3: first FGD

We conducted 2 FGDs. We invited 15 medical school faculty members by e-mail and letter to participate in our sessions. FGDs were audio-recorded with the agreement of the participants. During each session, researchers took notes of the important points and gave the opportunity to all the members to express their comments and ideas.

The first FGD consisted of 7 faculty members from clinical science and 7 members from basic science. We provided copies of the questions and the needed information for the faculty members. Afterwards, one of the researchers (M.M.) presented relevant explanations and asked questions and then in a brain-storming session participants discussed the issues together.

Step 4: questionnaire

The main goal of Step 4 was validation of the components. The 28 components obtained from the previous steps were used to construct a questionnaire. Participants were asked to score the importance of each component from 0 (lowest score) to 10 (highest score). They were also requested to add additional components that they considered important and to provide comments about deleting or modifying the free text at the end of the questionnaire. This step was conducted face to face.

Step 5: second FGD

The second FGD included 4 faculty members from clinical science and 4 from basic science. After providing a report containing the results of Step 4 participants discussed the issues together. Some of the components were integrated or revised. Then general discussions took place for each component. When we believed we had reached saturation we finalized the components in this step.

Data analysis

Qualitative data were analysed using qualitative analysis and the inductive approach. The recorded interviews and FGDs were transcribed verbatim by 2 of researchers (M.M. and A.Z.). The same 2 researchers independently read each transcript, extracted important statements and phrases and formulated meanings for these statements. Statements and phrases from all participants that were similar were grouped together or clustered into one list of themes. The researchers (M.M. and A.Z.) sent the other researcher (H.K.) a copy of their results along with original descriptions for validation and confirmation of the consistency between these clusters and the original descriptions. Similar results were obtained. Then all the researchers (M.M., A.Z. and H.K.) combined the results and wrote an exhaustive description. We returned these finding to the participants to validate the findings. No new data were revealed from the participants.

Quantitative data were analysed using *SPSS*, version 11.5. We used descriptive statistics, including mean and standard deviation (SD) to analyse quantitative data from the scoring steps.

Results

Table 2 shows selected demographic characteristics of the participants, including age, sex, subject and academic rank. Most of the participants (81%) were men and the largest proportion of participants were aged 46–50 years (38%).

Archive study

Box 1 lists the 20 components in the 3 domains of knowledge, attitude and practice, based on the results of the archive study. Knowledge was defined as "Having awareness of the values, beliefs and norms of different ethnic, racial and cultural groups"; attitude was "Having the values, beliefs and understandings that are the foundation of professional

Table 2 Selected demographic characteristics of the study participants (*n* = 21)

Characteristic	No.	%
Age (years)		
≤ 45	4	19
46–50	8	38
51–60	5	24
≥ 61	4	19
Sex		
Female	4	19
Male	17	81
Subject		
Clinic science	10	48
Basic science	11	52
Academic rank		
Professor	6	29
Associate professor	6	29
Assistant professor	6	29
Lecturer	3	14

Box 1 Initial list of components of cross-cultural competence of faculty members in medical school based on the archive study

Knowledge

- Having awareness of relevant sources to obtain cultural information
- Having awareness of the risk of discrimination among people from different cultural backgrounds
- Having awareness of the different needs of people from different cultures
- Having awareness of non-verbal communication symbols in different cultures
- Having awareness of beliefs in various cultural communities

Attitude

- Accepting cultural diversity (customs, different ways of communication, beliefs, different traditions and perspectives)
- Having an altruistic viewpoint
- Understanding the risk of selecting one's own culture (her/his norms and professional values) as the correct culture (self centred)
- Believing in the need to be careful of one's behaviour regarding reactions to people from different cultural backgrounds

Practice

- Demonstrating a desire to respond to the client's cultural needs (e.g. patients, patient's family, students, colleagues and other clients)
- Having the ability to create a trustworthy relationship
- Expressing empathy
- Demonstrating a respectful attitude towards differences between people from different cultural backgrounds
- Being flexible in choosing the appropriate approach with clients from different cultures
- Allocating sufficient and appropriate time for clients
- Practising active listening
- Having good verbal communication skills
- Having the ability to use non-verbal communication skills and body language
- Having consideration for education about cultural competence for students in the area of professional activities
- Practising self-development in fields related to cultural competence (e.g. attending educational programmes, cultural trips, etc.)

norms"; and practice was "Demonstrating knowledge and attitude in behaviours and encounters".

Interviews and FGDs

The 8 new components, including 1 component in the domain of knowledge and 7 components in the domain of practice, were added to the previous components after analysing the interviews and the first FGD and eliminating the duplicate components. The following components were added. In the domain of knowledge we added: "Having awareness of one's limitations regarding cultural context and issues". In the domain of practice the following were added: "Maintaining equity in professional behaviour in encounters with people from different cultures"; "Having appropriate behaviour in cultural encounters", "Having appropriate appearance (e.g. clothing) considering the beliefs of the local culture"; "Being open to criticism and tactful about giving criticism to others"; "Having modesty in expression"; "Cultural production (e.g. faculty members should make their own experiences and ideas viable and lasting)"; and "Having tolerance in encounters with different cultures in the area of professional activities".

In the validation step the mean scores ranged from 6.9 to 9.3 and the mean of all the components was greater than 5 (out of 10), indicating that all of them were considered important. The highest score [mean 9.3 (SD 0.57)] was given to the component "Accepting cultural diversity (customs, different ways of communication, beliefs, different traditions and perspectives)" from the attitude domain. The lowest score [mean 6.9 (SD 0.9)] was given to "Having awareness of non-verbal communication symbols in different cultures" from the knowledge domain. No new components were added by the participants.

In the second FGD, we changed the name of the "practice" domain to "behaviour". Six components were combined—"Having the ability to use non-verbal communication skills and body language", "Having good verbal communication skills", "Practising active listening", "Expressing empathy", "Having modesty in expression" and "Having appropriate behaviour in cultural encounters"—and the component "Having good verbal and non-verbal communication skills" was created. Two components were eliminated—"Allocating sufficient and appropriate time for clients"; "Having tolerance in encounters with different cultures in the area of professional activities"—since other components already covered their concept. The components of "Having appropriate appearance (e.g. clothing etc.) considering the beliefs of the local

Box 2 Final list of components of cross-cultural competence of faculty members in medical schools

Knowledge

- Having awareness of information resources about different ethnic and religious cultures
- Having awareness of the risk of discrimination towards people from different cultural backgrounds
- Having awareness of the diversity of needs of people from different cultures
- Having awareness of non-verbal communication symbols in different cultures
- Having awareness of beliefs in various cultural communities
- Having awareness of one's own limitations (knowledge, communication, practical) concerning different ethnic and religious cultures

Attitude

- Accepting cultural diversity (e.g. customs, different ways of communication, beliefs, different traditions and perspectives)
- Having an altruistic point of view
- Understanding the risk of selecting one's own culture (own norms and values in profession) as the correct culture in professional behaviour (culturally self-centred)
- Believing in the need to care about professional behaviour in interactions with people from different cultures

Behaviour

- Demonstrating the desire to respond to the needs of clients from different cultures (e.g. patients, patient's family, students, colleagues and other clients)
- Having the ability to build trustworthy relationships with clients from different cultures
- Demonstrating a respectful manner towards cultural differences among people in the area of professional activities (e.g. being respectful to different experiences and perspectives)
- Being flexible in choosing the appropriate approach with clients from different cultures
- Having good verbal and non-verbal communication skills
- Considering education in cultural competence for students in the area of professional activities
- Practising self-development in fields of cultural competence (e.g. attending educational programmes, cultural trips, etc.)
- Maintaining equity and fairness in professional behaviour in encounters with people from different cultures
- Having appearance appropriate to accepted norms of society
- Being open to criticism and tactful about giving criticism to others
- Making one's own experiences and ideas viable and lasting (cultural production)

culture" and "Cultural production (faculty members should make their own experiences and ideas viable and lasting)" were transformed into "Having appearance appropriate to accepted norms of society" and "Making one's own experiences and ideas viable and lasting (cultural production)". Other components were modified in terms of their word structure and the final list of components were prepared and accepted by all the participants (Box 2).

Discussion

A major portion of the cultural competence literature can be found in the fields of health care and social work (*20*). Most of the frameworks we identified originated from North America (*21–23*), although some had been developed in the United Kingdom (*24*) and New Zealand (*25*). Despite some differences, the existing frameworks for cultural competence have much in common (*25*). The components of cultural competence, however, need to be determined for each country, based on its specific goals, vision and population characteristics. These components are also likely to reflect a country's political, historical and sociocultural features. There are now many examples of frameworks, standards and models for cultural competence—e.g. the Accreditation Readiness Standards for Culturally Competent Healthcare Practitioners under the Joint Commission's 21 standards and the Culturally and Linguistically Appropriate Services (CLAS) standards—but they have not been exclusively developed to relate to medical faculty members (*26–28*). Existing frameworks are used to assess the competence both of students and faculty members as well as other healthcare personnel, and these place less emphasis on the interaction between faculty members and students of culturally diverse backgrounds and more emphasis on the faculty members being role models and training providers of cultural competence for students. In our study in the Islamic Republic of Iran, both of these situations were considered. Participants in the current study identified ethnic and religious diversity as important factors and emphasized the development of knowledge, attitude and behaviour based on this. Participants did not identify racism and discrimination as significant issues.

In current study, the 21 components of cultural competence identified were categorized into 3 major domains: knowledge (6 components), attitude (4 components) and behaviour (11

components). Many standards and guidelines that are currently used to define cultural competence—e.g. the standards of the Medical Council of New Zealand and frameworks of cultural competence from North America—are based on these same domains (*25*,*29*).

Our participants expressed the importance of knowledge as a precursor to changing an attitude; therefore, knowledge was placed before attitude in this study and included 6 components related to knowledge and awareness of values, beliefs and norms of different ethnic, racial and cultural groups. In some of the existing frameworks, e.g. that of Jirwe et al. (*25*), cultural sensitivity is seen as a precursor to culturally appropriate care. The 4 components of attitude in our study are similar to their study regarding cultural sensitivity. In our study, behaviour included 11 components related to demonstrating knowledge and to attitude in behaviour and encounters. More specifically, key aspects of cross-cultural competence include the ability to manage language barriers, communication styles, mistrust and prejudice, family dynamics, customs and spirituality, and sexual and gender issues. Cross-cultural competence depends also on demonstrating empathy, curiosity and respect, which are key factors for effective patient care in a multicultural context (*30*). In the current study, the identified components of behaviour also included these aspects.

Many studies and frameworks, e.g. the Tool for Assessing Cultural Competence Training (TACCT), and the models of Campinha-Bacote and Jirwe et al., have emphasized the importance of establishing effective communication skills in cross-cultural encounters (*23*,*25*,*31*). In the current study, the following components emphasized this issue: "Having the ability to build trustworthy relationships with clients from different cultures" and "Having good verbal and non-verbal communication skills". Many existing frameworks and components, e.g. TACCT, have emphasized health disparities. In our study, the component of "Maintaining equity and fairness in professional behaviour in encounters with people from different cultures" focuses on disparities. Some of the components in the current study highlight the interaction between faculty members and students, e.g. "Making one's own experiences and ideas viable and lasting (cultural production)", "Having consideration for education about cultural competence for students in the area of professional activities" and "Being open to criticism and tactful about giving criticism to others". Furthermore, these 3 components are also relevant to interactions with other clients.

There are some limitations to this study that could be addressed and used to guide future research in this area. Although we invited faculty members who had had educational experience at universities of different areas in Islamic Republic of Iran, the number of experts was limited. Secondly, the study was only conducted at one institution. Further research is needed to among a wider group of faculty members.

Conclusions

Available evidence from multicultural education addressing ethnic and religious diversity highlights the importance of education and assessment of cultural competence in faculty members and students of medical science. A comprehensive educational strategy must be developed for assessment among faculty members and students in the Islamic Republic of Iran. The components developed in this study will provide guidance to develop a tool to assess the cross-cultural competence of faculty members in Iranian medical schools.

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WHO events addressing public health priorities

WHO action on salt reduction

Why is salt reduction important?

Excessive salt intake is a major global public health concern as it accounts for a considerable proportion of the burden of noncommunicable diseases such as high blood pressure and cardiovascular diseases, especially coronary heart disease (CHD) and stroke. There is a clear link between high salt intake and high blood pressure; likewise there is conclusive scientific evidence that reduction of sodium consumption reduces blood pressure. High blood pressure is a major risk factor for both stroke and CHD, resulting in excess deaths and severe disability among survivors. Even a small (1 g per person per day) reduction in salt intake will reduce deaths from strokes and heart attacks by more than 7% in each country that takes the appropriate measures to achieve this.[1]

Salt reduction is a very cost-effective public health policy. For example, in the United Kingdom it was estimated that for a total campaign cost of £15 million to reduce daily salt intake, £1.5 billion per year would be saved in health care costs.[1]

Salt consumption in the Region

WHO recommends no more than 2 g of sodium (equivalent to 5 g of salt) per day.2 Approximately 95% of sodium is consumed in the form of salt. Data collected from the Eastern Mediterranean Region show that the average daily salt consumption in most countries is estimated or measured to be around 10 g per person per day, double the amount recommended by WHO; intake in a few countries is even well above this level In most countries in the Region, bread alone accounts for up to 40% of the total dietary salt intake, with an average salt content varying from 0.28% to 1.52% according to the results of a rapid analysis study of the salt content of staple "flat" bread and other breads traditionally consumed in selected countries of the Region. Significant variations exist in the salt content of the same type of bread from one country to another, in addition to variations existing among different types of bread within the same country. The highest average salt content level observed in bread was in Morocco (1.47 g/100 g) contributing to about 50% of total dietary salt intake. The lowest average salt content levels were observed in the Lebanese bread in Jordan (0.42 g/100 g), Egypt (0.55 g/100 g), Qatar (0.52 g/100 g) and Lebanon (0.55 g/100 g), representing 12.3%, 19.3%, 14.8% and 18.3% of the total dietary salt intake based on 300 g of daily bread intake per person. Added salt during home cooking, food preparation and catering or upon eating is yet another considerable source of salt intake in the Region as it the consumption of salty food products, such as cheese, processed meat and tomato products and pickles.

Global salt reduction developments

With evidence showing that population-based salt reduction measures are very cost-effective in reducing the burden of noncommunicable diseases, such measures have been identified as among the 'best buys' for noncommunicable diseases[3]. Best buys are cheap, feasible and culturally acceptable to implement in all health systems. The Political Declaration of the High-Level Meeting of the United Nations General Assembly on the Prevention and Control of Non-communicable Diseases[4], held in New York in September 2011 and attended by heads of states and governments, emphasized the importance of salt reduction as a key intervention to reduce the burden of noncommunicable diseases. Consequently, the 66th World Health Assembly endorsed a 30% relative reduction in mean population intake of salt by 2025. Reducing salt intake and meeting this goal is also crucial for achieving two other targets for 2025 also endorsed by the Assembly: a 25% relative reduction in the prevalence of raised blood pressure (defined as systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg) and a 25% relative reduction in premature mortality from noncommunicable diseases.

Regional response

The Regional Committee for the Eastern Mediterranean in its Fifty-ninth and Sixtieth sessions in October 2012 and

1 PH25 prevention of cardiovascular disease: costing report. Implementing NICE guidance. London: National Institute for Health and Care Excellence; 2010 (http://guidance.nice.org.uk/PH25/CostingReport/pdf/English, accessed 18 May 2014)

2 Guideline: Sodium intake for adults and children. Geneva: World Health Organization; 2012 (www.who.int/nutrition/publications/guidelines/sodium_intake_printversion.pdf, accessed 18 May 2014).

3 Global status report on noncommunicable diseases 2010. Geneva: World Health Organization; 2011 (www.who.int/nmh/publications/ncd_report_full_en.pdf, accessed 18 May 2014)

4 United Nations. Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Noncommunicable Diseases. Resolution adopted by the General Assembly, New York, 19 September 2011 (A/Res/2/66).

October 2013, respectively, adopted two resolutions (EM/RC59/R.2 and EM/RC60/R.4) concerning the implementation of the Political Declaration of the High-Level Meeting of the United Nations General Assembly on the Prevention and Control of Noncommunicable Diseases. Central to both resolutions is a regional framework for action to implement the Political Declaration with commitments by Member States to implement a set of strategic interventions including salt reduction.

In this regard, the WHO Regional Office for the Eastern Mediterranean convened a series of multistakeholder technical meetings focusing on population salt reduction strategies that culminated in: (1) developing and publishing the regional protocol on 24-hour urinary sodium and iodine measurements, which was used as a guide to aid research efforts in the Region, (2) supporting a network of regional research institutions – in Egypt, Iran, Jordan, Lebanon, Morocco, Tunisia and United Arab Emirates – in conducting the 24-hour urinary sodium excretion as the gold standard for assessing a person's dietary sodium intake, (3) developing a policy guidance with recommended actions for Member States to lower national salt intake and death rates from high blood pressure and stroke in the Eastern Mediterranean Region (summarized in Box 1) and (4) setting up a regional

Box 1 Summary of recommended actions to lower national salt intake and death rates from high blood pressure and stroke in the Eastern Mediterranean Region

Phase 1: January 2014 – focus on bread production

1. Establish a national taskforce on salt reduction representing key stakeholders and partners.
2. Achieve a 10% reduction of salt/sodium in staple bread within 3–4 months which will reduce salt intake by about 0.5 g per day in the whole population.
3. Establish salt standards for compliance by all bakers.
4. Promote compliance by linking government flour/bread subsidies and other incentives to bakers'
5. Mandate the use of iodized salt in local and imported food to ensure adequate maintenance of the population's iodine status.
6. Identify the top five other food contributors to salt/sodium in the national diet other than bread.
7. Review and progressively revise national food standards for bread so as to achieve a 30% reduction in salt/sodium in bread from current levels over an 18-month period.
8. Establish national groups to obtain population-based food intake data, a laboratory group to measure the salt content of specified foods and a national group for monitoring salt intake using 24 h urine measurements.

Phase 2: June 2014

1. Confirm progressive salt changes in national bread production.
2. Government establishments to start reducing salt content in all food served on their premises by 10% every 6 months over a period of 2 years.

Phase 3: January 2015

1. Confirm government-based initiatives and compliance with further 10% reduction in salt levels.
2. Engage major national businesses and all caterers to help lower salt intakes.
3. Conduct a public education campaign focused primarily on caterers and those providing food.
4. Engage with general businesses to encourage them to contribute to reduce salt in the food provided in their canteens.
5. Educate caterers and those responsible for home cooking.

Source: http://www.emro.who.int/nutrition/strategy/salt-policy-statement.html

monitoring mechanism to monitor progress and maintain accountability for results at the national and regional levels.

Research institutions, including WHO Collaborating Centres, in several countries are producing nationally representative data on population salt intake using 24-hour urinary sodium excretion, salt content of commonly consumed foods, and food consumption patterns. This research will provide crucial data to inform policy and monitor the impact of programmes and interventions.

National progress scaled up

A few Member States are currently taking active steps based on the policy guidance and recommended actions on salt reduction. Kuwait gradually reduced the salt content of bread through its public bread supplier that provides the majority of the market need for bread by 20% in one year as follows: 10% reduction in the first 6 months of 2013, followed by another 10% reduction in the following months in 2013. This is an important public health achievement. Moreover, Kuwait is currently revising its salt standard for cheese and is establishing national targets for upper limit of salt content in 13 types of mostly consumed cheeses.

Qatar has reduced the salt content in bread by 10% since early 2014 through its main public bread supplier that provides nearly a third of the market need for bread. A further 10% reduction in salt content of the same bread is planned for by end of 2014. The Islamic Republic of Iran has adopted legislative approaches towards salt reduction in a number of products, including establishing maximum levels of salt in highly consumed canned foods, such as tomato paste, and salty snacks.

Other Member States are in the process of preparing draft legislation on salt reduction (Bahrain) and/or revising existing legislation to develop benchmarks for salt content of highly consumed foods like cheese (Jordan and Kuwait). In others (Egypt, Islamic Republic of Iran, Jordan, Kuwait, Oman and Qatar), multisectoral national committees have been established with an authority to strategize and monitor implementation of salt reduction activities.

The way forward

The reduction of salt intake in populations is everybody's business and is a crucial intervention for protecting and promoting the health of people in the Eastern Mediterranean Region. Salt reduction is best achieved through serious and sustained multidimensional and multisectoral approaches through a step by step process that follows the policy guide and recommended actions developed by WHO in consultation with Member States. All countries must now implement measures, guided by a national multisectoral strategy and plan, to reduce salt intake at the population level. There is a need to monitor compliance by Member States with the agreed-upon set of actions to scale up interventions and measure impact at both national and regional levels while sharing evidence on what really works in our Region. There is also a greater need to engage civil society, youth and the media, particularly in building awareness and advocacy efforts around salt reduction and policy impact measurement. Based on the technical consultations and feedback by Member States, WHO is currently working on a series of steps to support countries in adopting other cost-effective measures, such as developing guidance on legislative approaches to salt reduction and examining evidence towards implementing taxes on salt and high salt foods as international experiences, namely from Hungary and Portugal, support the effectiveness of such measures. WHO also intends to generate evidence on the economic cost of salt reduction and on addressing the technological barriers and food safety concerns in producing quality bread with low salt content.

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