

# Health promotion and education interventions in the Eastern Mediterranean Region: a rapid evidence review

Tahir Turk<sup>1,2</sup> and Wasiq Khan<sup>3</sup>

<sup>1</sup>Dow University of Health Sciences, School of Public Health, Karachi, Pakistan (Correspondence to: T. Turk: [tturk@cpimail.net](mailto:tturk@cpimail.net)). <sup>2</sup>Communication Partners International (CPI), Springfield, NSW, Australia, <sup>3</sup>World Health Organization Regional Office for the Eastern Mediterranean, Cairo, Egypt.

## Abstract

**Background:** Health promotion and education (HPE) is a valuable component of initiatives to improve health and prevent disease in the Eastern Mediterranean Region (EMR).

**Aims:** To assess the type and scope of HPE interventions in the EMR and analyze lessons learned.

**Methods:** A rapid review was conducted using a PICOS (participants, interventions, comparisons, outcomes and study approaches) framework guiding approach.

**Results:** We identified a growing interest in HPE approaches in the EMR, with the majority of studies published within the past five years. Few high-quality studies were identified. Formative research predominated with nearly half of the studies recommending the need to scale up HPE interventions. There was little emphasis on implementation and evaluation of priority HPE interventions.

**Conclusion:** The findings highlight the need to: (1) up-scale resource-efficient HPE interventions; (2) implement HPE programmes addressing noncommunicable disease priorities; and (3) capacity building to operationalize high-quality interventions and evaluations.

Keywords: health promotion, health education, burden of disease, EMR

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## Introduction

Health promotion and education (HPE) are considered essential for the prevention of disease in high-income countries (1–3). This may be more applicable in low- and middle-income countries (LMICs) because of the higher disease burdens, limited resources to deal with chronic conditions, and greater inequities due to socioeconomic, cultural and other factors (4). As greater understanding of the social determinants of health evolved, the United Nations established the Sustainable Development Goals to help improve the conditions under which people in developing countries live (5,6). The Ottawa Charter for Health Promotion (7) and the Jakarta Declaration (8) have provided guidance to the global community about the relevance and importance of HPE strategies.

It is, therefore, not surprising that HPE has garnered increasing interest for its potential application in LMIC settings, including the 22 countries in the World Health Organization (WHO) Eastern Mediterranean Region (EMR), that experience volatility (e.g. conflict, regime change, natural disasters and grinding poverty) and high burdens of disease (9, 10). However, despite the potential of HPE interventions to support health programmes and policies, to date, no comprehensive reviews have been conducted to identify the type, scope and evaluation of HPE interventions in the EMR.

The aim of this study was to systematically review the literature to assess the type of HPE interventions in the EMR and synthesize lessons to be learned for the development, implementation and evaluation of future HPE interventions in the region.

## Methods

A best practice procedure for rapid evidence reviews was adopted, in line with WHO recommendations for swift knowledge generation for priority health issues (11). The rapid review process is premised on the fact that research methods in resource-constrained LMIC settings need to be highly efficient and focussed to provide evidence from which to form effective policies and programmes and make crucial decisions about health systems' response in emergency situations, as well as in routine decision-making. Procedures involved completing the review in a timely fashion, limiting the search to main databases of published literature, and having one reviewer extract data while another reviewer verified the findings (12,13). The search used 27 online databases including ABI/INFORM Complete, ProQuest, Ovid Medline, Sage Journals Online, NCBI, Project Muse, Wiley Online Library, Index Medicus for the Eastern Mediterranean Region, and Google Scholar, with keywords including "health promotion" and "health education" paired separately with the 22 WHO EMR countries of Afghanistan, Bahrain, Djibouti, Egypt, Islamic Republic

of Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates and Yemen. Inclusion criteria were peer-reviewed journal articles, conference proceedings and the grey literature relating to the EMR, available in English and published between January 2000 and March 2019. A PICOS framework (participants, interventions, comparisons, outcomes and study approaches) guided the study approach, research questions and the literature search (14).

## Results

A total of 181 articles and reports were identified of which 22 were duplicates. Of the remaining 159 articles/reports reviewed, 59 were excluded from further consideration because they did not conform to the PICOS framework criteria, and a further 12 articles were removed because they were not available as full text and/or in English, leaving a sample of 88 articles/reports. Following a second independent review of the full-text items, a further 30 items were excluded because they did not have clear HPE focus and/or did not meet all of the quality design checklist criteria, leaving a total of 57 studies that met the selection criteria (Figure 1)

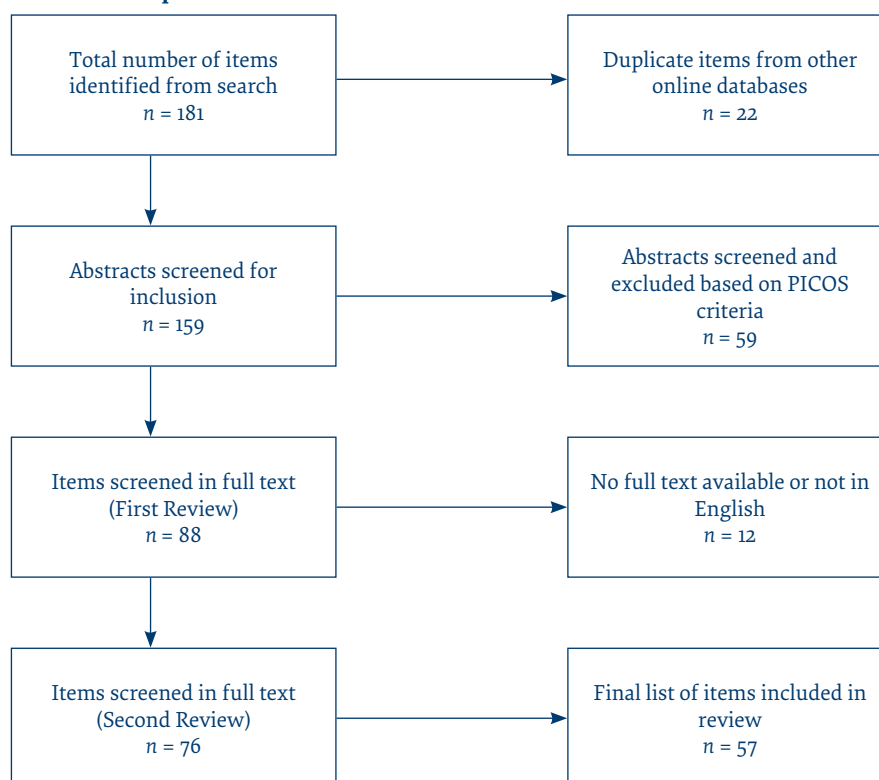
The number of HPE articles was calculated according to the inclusion criteria to identify the range of HPE best-practice approaches within the EMR and the specific types of interventions undertaken. The largest number of HPE items was from the Islamic Republic of Iran (17); followed by Sudan (5); Tunisia and Yemen (4); Pakistan, Palestine and Saudi Arabia (3); Oman and Syrian Arab Republic (2); and Afghanistan, Bahrain, Djibouti, Egypt,

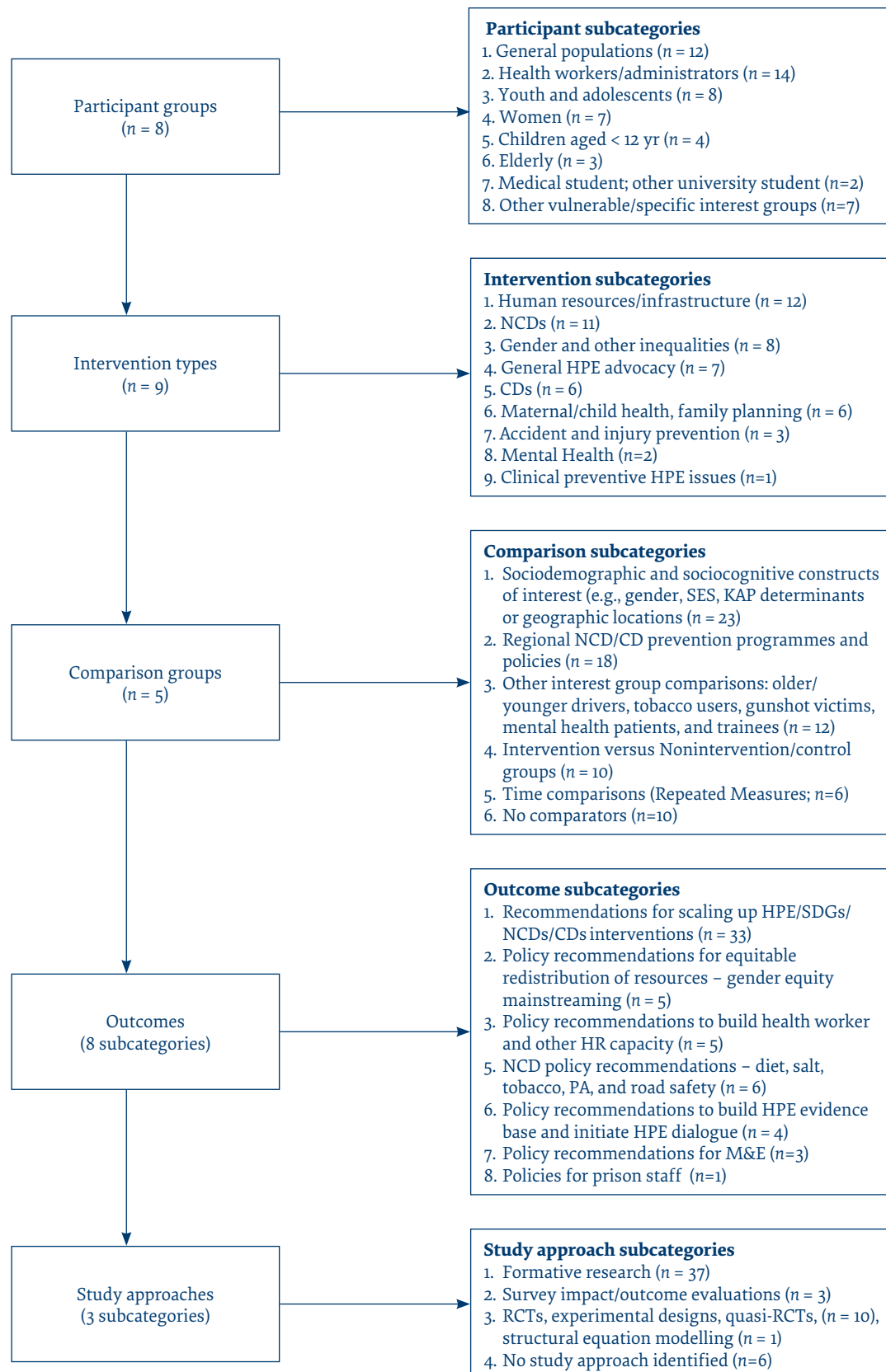
Iraq, Jordan, Kuwait, Lebanon, Libya, Qatar and UAE (1). There were no HPE items from Morocco and Somalia. Most of the reviewed articles (35, 61%) were published between 2014 and 2018, with 13 (23%) published in 2017 alone. An additional 20 (35%) of the articles were published between the years 2008–2013, with only 2 (3%) of HPE articles published in 2002–2007.

Enumeration of the PICOS criteria and subcategories was undertaken to gain a granular understanding of the scope, purpose, methodology and outcomes of the reviewed interventions and studies. Figure 2 shows a schematic representation of each criterion with its associated subclassifications, including the total number of items identified from the search, abstracts screened for inclusion, and number of full-text items screened at each of the two reviews.

Of the 57 articles reviewed (Appendix 1), 11 with high quality evaluation components were benchmarked against five best-practice quality criteria including: (1) clear study description, (2) appropriate comparison groups and situations, (3) clear description of methods, (4) rigorous and well-described analysis, and (5) clearly articulated findings and recommendations aligned to the analysis. Furthermore, a star ranking was applied for achievement of each of the criteria (Appendix 2). A detailed review of the 11 HPE study outcomes identified significant positive outcomes for demand-side beneficiaries on communicable disease prevention (e.g. improvements in polio coverage and immunization rates, enhanced tuberculosis knowledge and behavioural outcomes, and improved maternal health outcomes;  $P < 0.05$ ). Supply-side studies indicated HPE interventions in the form of health worker training programmes can also lead to significant positive outcomes.

**Figure 1 Search procedure for health promotion and education interventions in the Eastern Mediterranean Region**



**Figure 2** Classification matrix of HPE intervention within the EMR by PICOS parameters (N = 57)

CD = communicable disease; HPE = health promotion and education; HR = human resources; KAP = knowledge, attitudes and practices; M&E = monitoring and evaluation; NCD = noncommunicable disease; PA = physical activity; RCT = randomized controlled trial; SDG = sustainable development goal; SES = socioeconomic status.

## Discussion

We identified a growing interest in HPE approaches in the EMR, as demonstrated by the fact that most of the studies (57, 61%) were published within the past five years. However, the findings also suggest that the use of HPE approaches was nascent and largely directed toward formative research. Moreover, the findings from the small subset of evaluation-focused studies, while largely supportive of HPE approaches, currently lack the rigor needed to build an evidence base for the scaling-up of HPE interventions in the EMR, particularly if the goal is to use the data to drive policy development and implementation.

Our findings raise three key issues. The first relates to best-practice approaches, with few of the studies identified by the review receiving a 5-star rating (57, 9%) according to best-practice criteria. This identifies the need to expand capacity-building initiatives within the EMR, given the fundamental need for high-quality studies and evaluations to build the evidence base on what works. To this end, EMR stakeholders – ministry of health officials, epidemiologists and policy-makers – may benefit from regional efficiencies afforded through sharing lessons learned, and adaptation of resources and policies from successful HPE programmes from more advanced EMR economies, as well as global resources. The development of a repository or online portal for HPE interventions within the region may facilitate the sharing of knowledge among stakeholders.

The second key issue is that 57 (42%) of the reviewed studies recommended scaling up HPE interventions and policy initiatives going forward. This speaks to the need to move from policy formulation to making operational priority HPE interventions in the EMR. This will require political will as well as more direct engagement of donors to build local technical capacity for the design, implementation and evaluation of HPE initiatives, with knowledge transfer initially being derived from international advisors.

Third, we identified an underemphasis on implementation and evaluation of priority health issues known

to contribute to the major burdens of disease in the EMR, including noncommunicable diseases, communicable diseases, maternal and child health, and road accidents and injuries. Of the 11 best-practice intervention studies, only six dealt with high-priority issues. Given the potential for chronic conditions to overwhelm healthcare systems, the need to prioritize HPE preventative interventions is urgent. Health outcomes could be improved with small investments in public health priorities, using best-practice HPE demonstration projects aligned with Vision 2023 Eastern Mediterranean Region (15). HPE priorities should consider the epidemiological data, that highlight the scale of health problems – disease burden, health care, social and development costs – the amenability to effect change using HPE approaches, and the political and social will to effect the changes.

Given the reliance on online published papers, a key limitation of the rapid review relates to publication bias, with the possibility that local HPE interventions were not reported in the peer-reviewed literature, did not appear under the search terms, or were not in English. Although the review findings from the small subset of studies that formally evaluated interventions were largely positive, caution is warranted in not overinterpreting the findings.

## Conclusion

This is the first systematic review of HPE studies in the EMR. The findings suggest that to realize the latent potential of HPE within the EMR, a regional approach to identification of health priorities and the scaling-up of HPE interventions is needed and should be implemented alongside capacity building to up-skill local stakeholders involved in the development, delivery and evaluation of HPE campaigns and policy initiatives in a region of high need.

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**Competing interests:** None declared.

## Interventions en matière de promotion de la santé et d'éducation sanitaire dans la Région de la Méditerranée orientale : examen rapide des bases factuelles

### Résumé

**Contexte :** La promotion de la santé et l'éducation sanitaire constituent un élément précieux des initiatives visant à promouvoir la santé et à prévenir les maladies dans la Région de la Méditerranée orientale.

**Objectifs :** Évaluer le type et la portée des interventions de promotion de la santé et d'éducation sanitaire dans la Région de la Méditerranée orientale et faire la synthèse des enseignements tirés.

**Méthodes :** Un examen rapide a été réalisé avec un cadre d'orientation des approches portant sur les participants, les interventions, les comparaisons, les résultats et les approches d'étude.

**Résultats :** Un intérêt croissant pour les approches de promotion de la santé et d'éducation sanitaire dans la Région de la Méditerranée orientale a été identifié, la majorité des études ayant été publiées au cours des cinq dernières années. Peu d'études de qualité ont été identifiées. La recherche formative était prédominante, près de la moitié des

études recommandant la nécessité d'intensifier des interventions en matière de promotion de la santé et d'éducation sanitaire. La mise en œuvre et l'évaluation des interventions prioritaires de promotion de la santé et d'éducation sanitaire ont fait l'objet d'une attention limitée.

**Conclusion :** Les résultats soulignent la nécessité : 1) d'intensifier les interventions efficaces en termes de ressources en matière de promotion de la santé et d'éducation sanitaire ; 2) de mettre en œuvre des programmes de promotion de la santé et d'éducation sanitaire visant à répondre aux priorités relatives aux maladies non transmissibles ; et 3) de renforcer les capacités pour appliquer des interventions et des évaluations de qualité.

## تدخلات تعزيز الصحة/ التثقيف الصحي في إقليم شرق المتوسط: استعراض سريع للدلائل

طاهر ترك، واثق خان

### الخلاصة

الخلفية: يمكن أن يكون تعزيز الصحة والتثقيف الصحي من العناصر القيمة لمبادرات تعزيز الصحة والوقاية من الأمراض في إقليم شرق المتوسط. الأهداف: هدفت هذه الدراسة إلى تقييم نوع التدخلات المعنية بتعزيز الصحة والتثقيف الصحي ونطاقها في إقليم شرق المتوسط، وجمع الدروس المستفادة.

طرق البحث: هدفت هذه الدراسة إلى إجراء استعراض سريع باستخدام الأساليب التوجيهية لإطار "PICOS" (المشاركين والتدخلات والمقارنات والنتائج وأساليب الدراسة).

النتائج: ازداد الاهتمام بأساليب تعزيز الصحة والتثقيف الصحي في إقليم شرق المتوسط، إذ نُشرت معظم الدراسات خلال السنوات الخمس الماضية. وتم تحديد عدد قليل من الدراسات العالية الجودة. وأوصت البحوث التكوينية، التي مثّلت ما يقرب من نصف الدراسات، بالحاجة إلى توسيع نطاق التدخلات المعنية بتعزيز الصحة والتثقيف الصحي. كما كان هناك قصور في التركيز على تنفيذ التدخلات ذات الأولوية المعنية بتعزيز الصحة والتثقيف الصحي، وتقييمها.

الاستنتاجات: تؤكد النتائج على الحاجة إلى ما يلي: (1) توسيع نطاق التدخلات المعنية بتعزيز الصحة والتثقيف الصحي على نحو يتسم بالكفاءة في استخدام الموارد، (2) تنفيذ برامج تعزيز الصحة والتثقيف الصحي التي تتناول أولويات علاج الأمراض غير السارية، (3) بناء القدرات لتنفيذ التدخلات والتقييمات العالية الجودة.

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Appendix 2 Summary of key HPE intervention studies and outcomes in the EMR

Study title, authors (publication date)	Location (study/intervention period)	Participants	Intervention type (focal HPE issue)	Outcomes
Evaluation design (3 studies)				
Shaikh et al. (2003) (32)	Primary health care programme in squatter settlements in North Western Province of Pakistan (1996–1999)	4600 parents with children aged <5 yr	Cluster sampling approach in households; 8 clusters selected with 60 houses in each (N=480 houses). Face-to-face surveys with parents.	Change to door-to-door coverage strategy with medical students providing vaccinations was linked to an increase in polio coverage.
*** National Polio Day campaign in a squatter settlement through medical students.				
Turk et al. (2013) (33)	57 districts in Pakistan (2011)	24 000 male and female respondents aged 18–49 yr residing in urban and rural areas	National cross-sectional quantitative survey combined with preliminary qualitative approaches. Comparisons between TB campaign aware and TB campaign unaware groups. Data collected using face-to-face surveys. Outcome measures examined differences in KAP between groups.	Significant improvements in knowledge and attitudes toward TB from campaign aware groups and valuable insights into continuous improvement of the programme, including the additive effect of exposure to multiple channels of communication
****Evaluating the efficacy of TB Advocacy, Communication and Social Mobilization activities in Pakistan: a cross-sectional study				
Altuwaijri (2010) (41)	KSAU-HS, Riyadh, Saudi Arabia (2007)	Graduate students at Master of Health Informatics degree programme at KSAU-HS	Outcome evaluation survey of 22 graduates using self-administered survey instrument examining attitudes and opinions of e-health	Identified students were satisfied with the programme outcomes and found the programme was important for both government and private health sectors. E-health in Saudi Arabia seen as important, starting with strategic planning to tie projects and programmes resulting from the plan to the national strategies of the country
**Supporting the Saudi e-health initiative: Master of Health Informatics programme at KSAU-HS/Promotion				
2. RCTs, quasi-experimental and experimental designs (7 studies)				
Attari et al. (2017) (21)	Farabi Hospitals in Isfahan, Iran (2012)	All nurses (N=64) working in psychiatric wards of Nour and Farabi Hospitals	Quasi-experimental study assessing the impact of a workshop delivered to nurses of 1 psychiatric ward (intervention group). The control condition was a psychiatric ward at another hospital. The outcomes were assessed using a repeated measures, knowledge-based questionnaire (before, immediately postintervention, and 3 mo after intervention).	The mean scores of nurses' knowledge were significantly higher in the intervention group compared to the control group at both post-workshop data collection points. Mean attitude scores after each phase also showed significant differences. Nurses also had high satisfaction (86.3%) with the educational workshop compared to ?????
****Efficacy of purposeful educational workshop of medical and nonmedical interventions based on needs assessments in nurses.				
Vakily et al. (2017) (16)	Health centres and hospitals in Isfahan, Iran	Midwives working at health centres and hospitals in Isfahan	A clinical trial with 70 midwives selected through a quota sampling method with participants randomly allocated into 2 classes of group- and CD-based trainings and trained in the fields of recognition, prevention, and management of domestic violence. Prepost self-administered questionnaires completed by both groups to evaluate midwives knowledge of and attitudes towards this issue, before and 2 mo after the intervention.	Findings identified no significant differences in mean score of midwives' awareness and attitude toward domestic violence before the training or differences between the group training or using the CD training option. t tests indicated awareness of both the group training class and CD training was significantly increased after the training.
***Comparing the effect of group-based and CD-based training on midwives' knowledge and attitude toward domestic violence in women of reproductive age				

Appendix 2. Summary of key HPE intervention studies and outcomes in the EMR (continued)

Study title, authors (publication date)	Location (study/intervention period)	Participants	Intervention type (focal HPE issue)	Outcomes
Kordi et al. (2017) (18) ***Effect of maternal role training programme on role attainment and maternal role satisfaction in nulliparous women with unplanned pregnancy	Health centres in Mashhad city, Saudi Arabia (2014)	67 nulliparous women with unplanned pregnancies attending health centres	Clinical trial on 2 randomly assigned groups of nulliparous women with unplanned pregnancies. In addition to usual pregnancy care, the intervention group received additional training sessions at 34–36 wk pregnancy and day 1 after delivery; then, 4-weekly follow-up by phone. The control group received the usual pregnancy care. Face-to-face interviews used the London questionnaire to measure unplanned pregnancy, Myself-as-Mother Scale (SD-Self), My-Baby Scale (SD-Baby), Perceived Competence Scale to measure maternal role attainment, and Parenting Sense of Competence Scale to measure maternal role satisfaction.	Women in the intervention group had significantly higher scores on the maternal role attainment and maternal role satisfaction measures when compared to the control group. The results supported recommendations to provide the maternal role training for nulliparous women (i.e., women who had not given birth before).
Bhiri et al. (2015) (52) ****3-year workplace-based intervention programme to control noncommunicable disease risk factors in Sousse, Tunisia	Sousse Governorate, in Sousse, Tunisia (September 2010 to March 2011)	Intervention and control groups in 6 companies (cannot access the article in Monash website)	A quasi-experimental study (pre- and post-assessments) with intervention and control groups. Intervention programme consisted of health education programmes, including workshops, films and open sensitization days. Free physical activity sessions and free smoking cessation consultations also conducted.	Findings showed meaningful improvement among employees toward diet and physical activity but not for tobacco use. Workplace seen as a crucial setting for health promotion, and future programmes should consider a multisectoral approach to control the main noncommunicable disease risk factors.
Sahli et al. (2016) (56) ****Effectiveness of a community-based intervention programme to reduce hypertension prevalence among adults: results of a quasi-experimental study with control group in Sousse, Tunisia	Sousse, Tunisia (2010–2013).	Intervention group of 940 and 1001 adults; control group had 940 and 976 adults	Quasi-experimental design (pre/post-evaluation) was used to evaluate the effectiveness of a 3-yr intervention for healthy lifestyle. The population study was randomly selected in both intervention and control groups before and after assessment. After considering a type 1 error $\alpha$ of 5%, a type 2 error $\beta$ of 20%, and a change in the prevalence of various risk factors of 6% before and after intervention, the sample size was fixed at 2000 adults in intervention and control areas.	After stratification for age, significant decrease in the prevalence of hypertension was observed for intervention group participants aged < 40 yr. A significant decrease in hypertension from 31.4% to 26% was observed in nonobese intervention group after stratification for weight status. No significant changes were observed in the control group. The findings support the feasibility and effectiveness of a community-based intervention to reduce prevalence of hypertension in the context of a developing country.
Keballi et al. (2014) (50) ****School-based intervention to promote healthy nutrition and physical activity in Sousse, Tunisia	Pilot study in 4 schools in 2 districts in Sousse, Tunisia (Jan–May 2007)	2200 school students aged 12–16 yr	Pre and post-test quasi-experimental design with a control group. Two intervention (1089 students) and two control (1011 students) schools. Several classroom interventions were delivered by the project team, school teachers and school doctors. Outcome measures included knowledge, intentions and behaviours before and after evaluation and control and intervention groups.	Significant improvements observed in the number of students with regard to knowledge of an ideal breakfast (15.7%–40.8%), and intentions to have a healthy breakfast (58.2%–67.5%); ideal composition of breakfast that contains dairy products, slow-burning sugar products and fruit (4.4%–10.5%); decrease in evening snack intake (59.4%–52.1%); decrease in daily soft drink intake (22.6%–18.8%); and decrease in number of students who ate fast foods $\geq 3$ times/wk (42.5%–30.9%).

Appendix 2 Summary of key HPE intervention studies and outcomes in the EMR (concluded)

Study title, authors (publication date)	Location (study/intervention period)	Participants	Intervention type (focal HPE issue)	Outcomes
Yekaninejad et al. (2012) (57)  *****Effect of a school-based oral health-education programme on Iranian children: results from a group randomized trial	Study conducted in 6 schools in Tehran. RCT conducted Sep 2010 – Mar 2011	392 schoolchildren in 6 schools in Tehran	Schools randomly allocated into 3 groups: comprehensive, student and control. Intervention in the comprehensive group consisted of strategies to encourage children, their parents, and school staff to increase frequency of brushing and flossing teeth. In the student group, the intervention targeted only children. The control group received no intervention. Desired outcomes were change in oral health and hygiene, and periodontal indices and in HBM components. Multilevel modelling was used for data analyses.	Students in the comprehensive intervention group brushed and flossed significantly more frequently compared with those in the student intervention group. Although students' gingival health improved significantly in the comprehensive intervention group, such significant improvement was not seen in the student group. In conclusion, promising results are seen when the oral-health education targets both school and home settings.
3. Structural equation modelling (1 study)  Iranagh et al. (2016) (23)  *****Health Belief Model-based intervention to improve nutritional behaviour among elderly women	Urmia City health centres in Northwest Iran, before and after 3 and 6 mo intervention	200 women aged ≥60 yr residing in Urmia for ≥5 yr independent in daily activities and not presenting with diabetes and food regimens	Cluster-random sampling used for the clinical trial with data collected using a study-specific questionnaire administered through face-to-face interviews. The study utilized a repeated-measures design. Demographic characteristics, nutritional knowledge, HBM constructs, and nutritional behaviour was assessed and measured on 6 HBM items consisting of perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy on 5-point Likert scales. 21 additional items assessed eating behaviours. Structural equation modelling was used for determination of model fitness, and hypotheses testing.	Findings identified that only self-efficacy was effective in improving nutritional behaviour. 43.9% of nutritional behaviour was explained by the HBM constructs after 3 mo intervention. Structural modelling of nutritional behaviour 6 mo after intervention with perceived susceptibility, perception of benefits, and barrier of the model being supported with HBM constructs explaining 69.5% of nutritional behaviour with participants, after interventions.

Reference numbers refer to reference numbers in Appendix 1. The star ratings were based on the following criteria: (1) clear study description; (2) appropriate comparison groups and situations; (3) clear description of methods; (4) rigorous and well-described analysis; and (5) clearly articulated findings and recommendations aligned to the analysis. One star was awarded for each criterion.

EMR = Eastern Mediterranean Region; HBM = health belief model; HPE = health promotion and education; KSAU-HS = King Saud bin Abdulaziz University for Health Sciences; RCT = randomized controlled trial.