

Public health research priorities in the Gulf Cooperation Council countries

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Abstract

Background: Research evidence gaps place limitations on efforts to address health challenges in the Gulf Cooperation Council countries.

Aim: To identify public health research priorities in the Gulf Cooperation Council countries.

Methods: Based on the burden of disease data, the Gulf Centre for Disease Prevention and Control identified public health priorities in the Gulf Cooperation Council countries in 2023. We searched available literature on PubMed, Google Scholar and Google to identify research themes appropriate for addressing the identified health priorities. We then used the Delphi technique to prioritise the research topics.

Results: The top priority research areas identified were: challenges in implementing antimicrobial stewardship programmes, economic impact of antimicrobial resistance interventions, effects of environmental change on the prevalence and movement of disease vectors, capacity and readiness of health systems to prevent noncommunicable diseases, factors influencing behaviour change for noncommunicable disease prevention, barriers to accessing noncommunicable disease prevention services, effectiveness of behavioural interventions in reducing tobacco use, gender-specific barriers to physical activity, seasonal patterns of physical activity, effectiveness of road safety interventions, and community safety culture regarding road traffic.

Conclusion: The research priorities provide a roadmap for closing the evidence gap and accelerating health policy-relevant research in the Gulf Cooperation Council countries.

Keywords: public health research, communicable disease, noncommunicable disease, environmental health, health priority, behaviour change, GCC

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Introduction

The Gulf Health Council (GHC) represents 6 Gulf Cooperation Council (GCC) Member States – the United Arab Emirates, the Kingdom of Bahrain, the Kingdom of Saudi Arabia, the Sultanate of Oman, the State of Qatar, and the State of Kuwait. In 2021, the GCC Supreme Council established the Gulf Center for Disease Prevention and Control (Gulf CDC) in Riyadh, Saudi Arabia, as an intergovernmental public health agency to strengthen regional preparedness and prevention across communicable diseases (1).

Against a backdrop of an increasing NCD burden and persistent communicable threats, Gulf CDC set out to define a region-specific research agenda that can inform policy and investment. In a context of finite resources and limited collaboration with academic institutions, research prioritisation targets the highest-impact questions, accelerates translation into practice, and, through stakeholder engagement, brings under-explored areas to the fore (2).

Methods

Gulf CDC developed and applied a multi-stage, consensus-based research prioritisation framework across the 6 GCC Member States. Details of the stages as follows:

Step 1: Map priorities to research areas

In 2023, Gulf CDC identified regional public health priorities from the burden of disease data (3). Under communicable diseases were antimicrobial resistance (AMR), viral respiratory diseases (including COVID-19 and influenza), and vaccination. Under NCDs were cardiovascular disease, diabetes, mental disorders and cancer. Risk factors focused on high body mass Index (BMI), unhealthy diet, social determinants of health, and smoking. Environmental threats included road traffic injuries, air pollution, and occupational health. Cross-cutting determinants, such as access to preventive care, cultural and lifestyle factors, public health capacity, and adherence to lifestyle changes, guided topic generation (4).

Step 2: Formulate research topics

The next step involved scoping the literature for examples of appropriate research. First, we conducted a review of literature to identify effective disease prevention research related to the identified priorities, using PubMed, Google Scholar and Google. The search used the domains described in Step 1, and keywords. The strategy used parallel country terms (United Arab Emirates OR Bahrain OR Saudi Arabia OR Oman OR Qatar OR Kuwait) and single-country queries using quotation marks (e.g. “Bahrain”). All articles describing research on any domain element were considered for inclusion. Grey literature and restricted access articles were excluded.

Titles and abstracts were screened to exclude irrelevant studies. Potentially eligible articles underwent full-text reviews against predefined inclusion criteria. Data were extracted and stratified by disease condition, key determinants (e.g. cancer prevalence, access to preventive care, cultural and lifestyle, public-health capacity, and adherence to lifestyle), and by GCC Member State. Findings were organised in tables to show gaps in each research domain.

Step 3: Define criteria for prioritising research topics

Scoring criteria were adapted from the Child Health and Nutrition Research Initiative (CHNRI) method (5). Seven criteria were selected for their ability to identify applied research topics with high potential impact and strong prospects for translation into public health practice, and were then weighted a priori. Each research topic was evaluated against the applicability of the 7 criteria using a 9-point scale, ranging from “not applicable” (score 1.0–3.0), to “uncertain/equivocal” (score 3.1–6.0), to “highly applicable” (score 6.1–9.0).

Step 4: Consensus methodology for setting research priorities

A Delphi technique, a structured consensus method involving multiple rounds of expert scoring and feedback, was applied in 3 rounds (6). In the first and second rounds, 22 national representatives from the 6 GCC Member States participated. In the third round, 20 subject matter experts in communicable diseases, NCDs and environmental health participated.

In the first round, participants scored the list of potential research topics in real time using an electronic audience response system (Mentimeter app), based on an agreed set of criteria (Table 1). Participants represented diverse fields, including communicable diseases and NCDs, microbiology, obesity and diabetes, health policy, population health, endocrinology, genomics and genetics, injury prevention, dentistry, and epidemiology.

Following aggregation of scores, results were discussed collectively, and the process was repeated in a second round to refine responses. This produced an initial prioritised list of topics considered relevant, applicable, deliverable and impactful within each disease category (Table 2). Participants were invited to provide additional recommendations and refinements.

In the third round, the top 10 topics were presented to 3 groups of subject matter experts according to their specialty. Each group reviewed the scores and discussed their relative importance in the GCC context. Consensus on the top priorities was reached within each group. This process produced the final list of public health research priorities for the region.

Results

A total of 42 experts participated across the Delphi rounds (22 national representatives in Rounds 1–2; 20 subject-matter experts in round 3). In rounds 1 and 2, 33 topics spanning 4 domains (communicable diseases, NCDs, NCD risk factors, environmental threats) were evaluated.

Table 1 Weighted criteria and definitions used to evaluate health research priorities

Criteria	Definition	Weight (%)
Effective	Potential to generate or improve effective health interventions	10
Deliverable	Likelihood of producing interventions that are deliverable within the GCC context	10
Fills key gaps	Potential to address critical gaps in knowledge required for translation and implementation	20
Maximum potential impact on burden	Potential to reduce a substantial proportion of the current disease burden	20
Potential for translation	Likelihood to generate knowledge that will be translated into health intervention	20
Feasible	Feasibility in terms of resources, funding, workforce, and data availability	10
Alignment with priorities	Consistency with regional and national health priorities	10
Total		100

Table 2 Summary of the 3-round Delphi consensus process used to establish priorities

Round	1	2	3
Method	The research generated topics are rated using 7 assessment criteria. We measure these on a 9-point scale to capture its relevance, applicability, deliverability, and impact. We calculate whether the selected research topic applies to the seven criteria as to being Highly applicable, Moderate, to Poorly applicable, and end up calculating the mean score of all 7 criteria.	More topics are discussed and added as recommendations.	Further recommendations are taken. This round works as a refining stage for the previous results, as we ask participants to re-rank the highest scored research topics from the previous, based on relevance, applicability, deliverability, and impact, and the average rank is taken.
Venue	In-person, through an interactive forum	In-person, through an interactive forum	An online survey
Participants	22 individuals from research and academia.	22 individuals from research and academia	20 experts in (NCD, or communicable diseases or environmental health)

Note: Each expert performed a separate survey depending on his field.

Twenty-one topics reached the high applicability threshold (weighted score $\geq 6.1/9$).

Rounds 1 and 2 findings

Of the 33 topics scored on the 9-point scale, 21 exceeded the high applicability threshold. The top 3 topics within each domain are shown in Figure 1, with overall score and criterion-specific scores.

Round 3 (final ranking)

In Delphi round 3, 20 experts in communicable diseases, NCDs, and environmental threats, reviewed the shortlisted topics and re-prioritised them for GCC relevance (Figure 1). The final top priorities were:

Communicable diseases

Investigating the challenges to implementing antimicrobial stewardship programmes emerged as the top priority. This was followed by assessing the economic impact of antimicrobial resistance interventions, and examining the effects of environmental change on the prevalence and movement of vectors in the GCC countries (Figure 1).

Noncommunicable diseases

Evaluating the capacity and readiness of the public health system to prevent NCDs was identified as the leading priority. The second was exploring factors influencing individuals' commitment to behaviour change for NCD prevention, while the third was investigating the barriers to accessing preventive services among people at high risk (Figure 1).

NCD risk factors

The foremost priority was evaluating the effectiveness of behavioural interventions to reduce cigarette use. This was followed by exploring gender-specific barriers to physical activity, and investigating seasonal patterns in physical activity among populations in the countries (Figure 1).

Environmental threats

Assessment of the effectiveness of road safety campaigns and interventions in reducing traffic injuries was ranked as the highest priority, followed by exploring the effectiveness of risk communication strategies in the workplace and their effect on injuries, and investigation of community safety culture on the prevention of road traffic injuries (Figure 1).

Discussion

We used a transparent, multi-step process with a multi-disciplinary advisory group—including representatives of GCC Member States, academics and practitioners—to agree a GCC-wide list of public health research priorities. The shortlist was refined and the top 3 topics were selected using predefined, objective criteria.

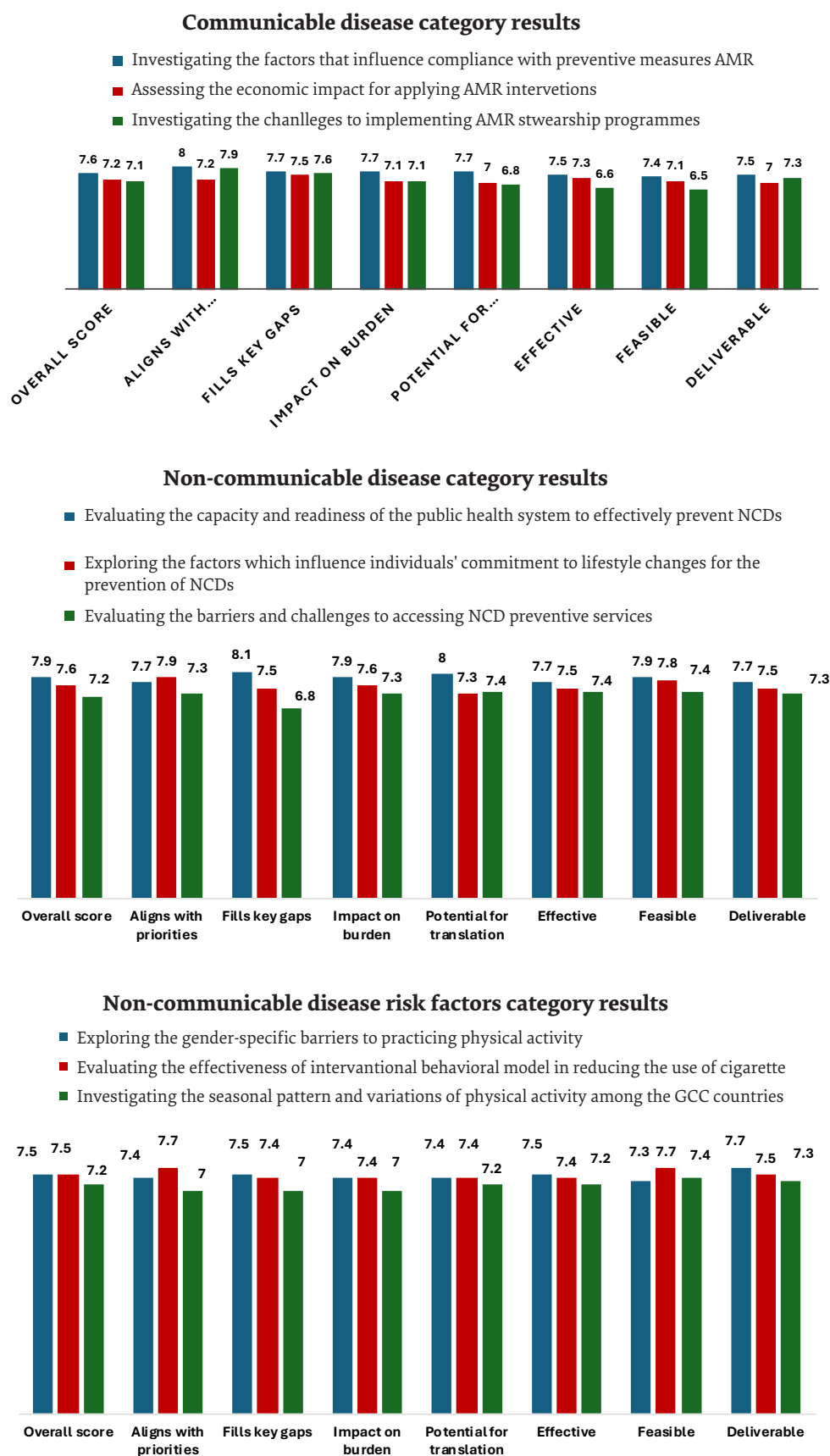
Communicable diseases

AMR was the leading priority. Progress has been made in several GCC health care systems towards AMR control, including assessment of practice gaps and prevalence research to guide prevention and control strategies (7,8). However, despite the establishment of national stewardship programmes, uptake and incorporation remain limited, and implementation barriers require evaluation (9). Another priority was to assess the impact of climate change on vectors and communicable diseases, where evidence on underlying mechanisms remains scarce (10).

Research areas for NCDs

NCDs, particularly diabetes and cardiovascular disease, remain a major health challenge in the GCC countries. The top priority was to evaluate the capacity and readiness of the public health systems for effective prevention of NCDs. Although lifestyle promotion strategies have been implemented, regular evaluations are rare, and the WHO 2021 Global NCD capacity survey revealed

Figure 1 Scores of the top 3 topics across the 4 research domains



significant policy enforcement gaps, indicating the need for systematic evaluation of public health readiness (11). This is particularly important as health care demand in the region is projected to increase substantially (12).

The second priority was to investigate the determinants of behaviour change, with emphasis on evaluating sustained commitment to healthier lifestyles in settings where cultural and religious norms strongly shape daily practices. The World Bank emphasizes the importance of culturally tailored interventions, especially among young people, as a key target for NCD prevention (13). Innovative approaches, including the use of anthropology, could support the design of long-term, culturally relevant interventions. Research on digital health interventions (DHIs) also indicate the need to measure long-term adherence to behaviour change (14). Regular assessments of individual commitment would help evaluate intervention effectiveness and identify predictors of sustained behaviour change in GCC countries (14).

The third priority was to identify barriers to the uptake of preventive services among people at high risk of NCDs. Despite the availability of cancer screening programmes, participation remains low (15). Barriers include transportation constraints, extreme climatic conditions, and sociocultural norms that discourage preventive care (16). Although some studies have assessed health care system-level challenges in the GCC, little evidence is available on barriers at the individual level (17,18). Generating such evidence could support efforts to strengthen health literacy, promote engagement, and expand equitable access to services, particularly for vulnerable groups. Addressing organisational and policy inefficiencies could also improve public health outcomes and reduce long-term healthcare costs (19).

Research areas for NCD risk factors

Three priority areas for NCD risk factors were identified: tobacco use, physical inactivity and climatic barriers to physical activity. Smoking cessation remains a critical priority given the increasing prevalence of smoking, especially among young people, the increasing use of electronic cigarettes and the associated economic and health burdens (19,25). Evaluating the effectiveness of behavioural interventions such as motivational interviewing and community support is therefore essential, particularly when adapted to cultural norms. Behavioural models can help clarify influences such as parental and peer pressures, supporting the development of targeted, culturally tailored cessation strategies.

A second priority was to examine gender-specific barriers to physical activity. Social and cultural factors often reduce women's participation, yet little is known about health beliefs and practices of different subgroups (21). Addressing these barriers could inform more inclusive, gender-sensitive policies and interventions. The low level of physical activity across the GCC, well-documented in literature, underlines the need for

prevention strategies that actively engage policymakers in promoting equitable opportunities for all groups (27).

The third priority relates to the impact of climate on physical activity. Extremely high summer temperatures in the GCC countries significantly limit outdoor activity and daily step counts, as shown in a Qatar cohort study (22). Seasonal variations in activity levels highlight the need for innovative prevention strategies adapted to the GCC's extreme climatic conditions (23,24).

Research areas for environmental threats

Road safety was identified as the highest research priority under environmental threats. In the GCC countries, rates of road traffic accidents and deaths exceed those in many western countries, highlighting the urgent need for context-specific interventions (25). Evidence from systematic reviews indicates that multifaceted approaches combining public awareness, education and enforcement are essential components of effective road safety strategies (26). However, their impact remains largely untested in GCC settings. A meta-analysis of 67 studies found that campaigns using personal communication and enforcement measures, particularly those of short duration (less than one month), significantly reduced accidents (27). Despite this evidence, further research is needed to adapt and evaluate these strategies in the GCC countries. A systematic review of 18 studies in low- and middle-income countries (LMICs) similarly concluded that integrating legislation with public awareness enhances effectiveness, reinforcing the importance of comprehensive approaches (35).

The second priority was to examine workplace risk communication and its role in injury prevention. Economic expansion in the GCC countries has increased workplace hazards, underscoring the need for effective risk communication strategies (29,30). A 2018 study in Qatar highlighted the importance of stakeholder engagement, awareness-raising, health care access and regulatory enforcement in reducing workplace injuries (30). By contrast, a 2020 study conducted in health care facilities in the United States, Switzerland, the United Kingdom, Taiwan and Sweden found that education alone did not significantly reduce workplace aggression, despite improvements in knowledge and attitudes, thereby questioning its effectiveness as a stand-alone primary prevention method (31).

The third priority related to the impact of community safety culture on road traffic injury prevention. Safety culture is defined as the shared values, actions, and behaviours that prioritise safety over competing demands (32). The relationship between community safety culture and road traffic injuries has attracted increasing attention from governments and non-government organisations. Understanding how this culture shapes road safety outcomes is important, as communities with stronger safety cultures experience fewer traffic injuries and fatalities, while weaker cultures are associated with higher risks (33,34).

Taken together, findings across road safety, workplace and community settings suggest that information-only approaches are insufficient. Multi-component, participatory strategies, integrating communication, enforcement and cultural values, should be prioritised for evaluation in GCC contexts to strengthen environmental health and safety outcomes.

Study limitations

Potential bias may have arisen from the relatively small number of participating experts and the selection process used. This was partly mitigated by previous work done to identify overarching disease priorities and by integrating these with findings from the literature reviews. A diverse panel of knowledgeable experts was convened to ensure a broad range of perspectives. Another limitation was the restriction to only 3 rounds of consultation. Additional rounds, with structured feedback from earlier ones, would have helped to refine responses and build consensus over time, potentially leading to a stronger outcome.

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Priorités de recherche en santé publique dans les pays membres du Conseil de Coopération du Golfe

Résumé

Contexte : Les lacunes en matière de données de recherche limitent les efforts déployés pour relever les défis sanitaires dans les pays du Conseil de Coopération du Golfe.

Objectif : Identifier les priorités de recherche en santé publique dans les pays membres du Conseil de Coopération du Golfe.

Méthodes : En s'appuyant sur les données relatives à la charge de morbidité, le Centre for Disease Prevention and Control du Golfe a défini les priorités de santé publique dans les pays du Conseil de Coopération du Golfe en 2023. Nous avons effectué une recherche dans la littérature disponible sur PubMed, Google Scholar et Google afin d'identifier les thèmes de recherche appropriés pour répondre aux priorités de santé identifiées. Nous avons ensuite utilisé la technique Delphi pour prioriser les sujets de recherche.

Résultats : Les principaux domaines identifiés étaient les suivants : difficultés rencontrées dans la mise en œuvre des programmes de bon usage des antimicrobiens, impact économique des interventions contre la résistance aux antimicrobiens, effets des changements environnementaux sur la prévalence et la circulation des vecteurs de maladies, capacité et état de préparation des systèmes de santé pour prévenir les maladies non transmissibles, obstacles à l'accès aux services de prévention des maladies non transmissibles, efficacité des interventions comportementales pour réduire la consommation de tabac, obstacles à l'activité physique liés au genre, variations saisonnières de l'activité physique, efficacité des interventions en matière de sécurité routière et culture communautaire concernant la sécurité routière.

Conclusion

This work outlines the Gulf CDC's comprehensive strategy for establishing research priorities tailored to the specific health challenges of the GCC countries. It identifies critical research areas in communicable diseases, noncommunicable diseases, and environmental threats through a transparent, structured, and participatory process involving a literature review and Delphi technique. Defining research priorities is essential for allocating limited resources, addressing pressing health challenges, supporting evidence-based public health policies and stimulating innovation in underexplored areas.

Overall, this work provides a framework for guiding future research efforts in the GCC countries and enables institutions to focus on priority health issues in the medium term. By addressing these priorities, the Gulf CDC aims to cultivate a robust research environment to strengthen public health outcomes and enhance the region's capacity to address its most pressing health challenges.

Conclusion : Les priorités de recherche constituent une feuille de route pour combler les lacunes en matière de données probantes et accélérer les recherches pertinentes sur les politiques de santé dans les pays du Conseil de Coopération du Golfe.

أولويات بحوث الصحة العامة في بلدان مجلس التعاون لدول الخليج العربية

سامي المدرع، آلاء القرشي، نوف الزهيري، محمد الشهري، رشا الفواز، ندى الناجي، أندرو أماتو، باسي بينتينين

الخلاصة

الخلفية: هناك ثغرات في بيّنات البحوث، مما يقيد الجهود الرامية إلى التصدي للتحديات الصحية في بلدان مجلس التعاون.

الأهداف: تحديد أولويات بحوث الصحة العامة في بلدان مجلس التعاون.

طرق البحث: استنادًا إلى بيانات عبء الأمراض، حدد المركز الخليجي للوقاية من الأمراض ومكافحتها أولويات الصحة العامة في بلدان مجلس التعاون في عام 2023. وقد بحثنا في المنشورات المتاحة على مواقع PubMed، Google Scholar، وGoogle لتحديد موضوعات البحث المناسبة لمعالجة الأولويات الصحية المحددة. ثم استخدمنا أسلوب دلفي لتحديد أولويات أساليب البحث. ثم استخدمنا أسلوب دلفي لتحديد أولويات موضوعات البحث.

النتائج: تمثلت المجالات البحثية ذات الأولوية القصوى المرصودة فيما يلي: التحديات التي تواجه تنفيذ برامج الإشراف على مضادات الميكروبات، والأثر الاقتصادي للتدخلات الرامية إلى مقاومة مضادات الميكروبات، وتأثيرات التغير البيئي على معدل انتشار نواقل الأمراض وحركتها، وقدرة النظم الصحية على الوقاية من الأمراض غير السارية واستعدادها لذلك، والعوامل التي تؤثر على تغير السلوكيات للوقاية من الأمراض غير السارية، والعقبات التي تحول دون الحصول على خدمات الوقاية من الأمراض غير السارية، وفعالية التدخلات السلوكية في الحد من تعاطي التبغ، والعقبات التي تختلف باختلاف نوع الجنس وتحول دون النشاط البدني، والأنماط الموسمية للنشاط البدني، وفعالية تدخلات السلامة على الطرق، وثقافة المجتمع فيما يخص السلامة على الطرق.

الاستنتاجات: توفر الأولويات البحثية خريطة طريق لسد الثغرة في البيّنات وتسريع وتيرة البحوث المتعلقة بالسياسات الصحية في دول مجلس التعاون.

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