المركز الخليجي للوقاية من الأمراض ومكافحتها
Gulf Center for Disease Prevention and Control

مجلس الصحة
لدول مجلس التعاون
Gulf Health Council

Gulf CDC research prioritization report

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List of Abbreviations

Abbreviation	Definition
GHC	Gulf Health Council
GCC	Gulf Cooperation Council
Gulf CDC	Gulf Center for Disease Prevention and Control
CD	Communicable Diseases
NCD	Noncommunicable Diseases
Ex	Example
KAP	Knowledge Attitude Practice
TB	Tuberculosis
HIV	Human Immunodeficiency Virus
RSV	Respiratory Syncytial Virus
E-Health	Electronic Health
CVD	Cardiovascular Disease
AMR	Antimicrobial Resistance
STD	Sexually Transmitted Diseases
SARA	Service Availability and Readiness Assessment

I. Executive Summary

The Gulf Health Council (GHC) was established in 1976 under the leadership of the Council of Ministers of the Gulf Cooperation Council (GCC). It includes the GCC Member States: the United Arab Emirates, Bahrain, Saudi Arabia, Oman, Qatar, Kuwait, and Yemen, which joined the Gulf Health Council in 2003. In 2021, the Supreme Council of GCC countries approved the creation of a Gulf Center for Disease Prevention and Control (Gulf CDC) in Riyadh, Saudi Arabia. The Gulf CDC aims to enhance cooperation in public health and knowledge exchange among member states, with a GHC vision of a Gulf community where all individuals enjoy good health at every stage of life.

To accomplish our goal and vision, the Gulf CDC hosted a workshop to discuss the Gulf region's research priorities related to Communicable (CD) and Non-Communicable Diseases (NCD) as well as Environmental Threats. The Permeant Communication Network members were gathered from all states of GCC to explore the spectrum of the Research opportunities at GCC and to build a work plan for future research based on ranked priorities using Gulf CDC criteria based on relevant, applied, deliverable, and impactful research questions.

The research priorities and outcomes identified in this report shall remain valid for a period of two years, effective from August 2024 through August 2026. This timeframe ensures the continued relevance and applicability of the findings while allowing for periodic reassessment in alignment with emerging public health challenges and developments in the Gulf region.

The expected outcomes of this work include:

1. An agreed-upon list of research priorities that will be reported to GCC member states.
2. A documented compilation of expert recommendations and insights on other potential health topics that should be addressed.

II. Introduction

The Gulf countries are currently working towards enhancing their research capacity and methodologies in order to provide strong evidence for the best tools and approaches to control both communicable and non-communicable diseases. The first step towards achieving this goal is identifying research priorities specific to the Gulf region and developing research questions that address the existing evidence gaps and meet the region's needs.

The Gulf CDC has developed a comprehensive framework to identify research priorities that reflect a highly demanding gap in the Gulf region. This framework has involved multifaceted approaches.

First, the 4 main disease areas were identified based on recommendations from the public health disease prioritization workshop **(Figure 1)**. They were chosen using the situational assessment report and disease burden study (1), which are:

1. **Communicable Diseases (CD)**
2. **Non-Communicable Diseases (NCD)**
3. **Non-Communicable Diseases Risk Factors (NCD Risk Factors)**
4. **Environmental Threats.**

III. Objectives of the research prioritization:

1. To achieve consensus on the most important research areas for the upcoming years while ensuring its relevance, applicability, deliverability, and impact on public health at member states and the Gulf CDC's work plan through a multi-stage voting process.

2. A documented compilation of experts' recommendations and insights on potential health topics that should be addressed.

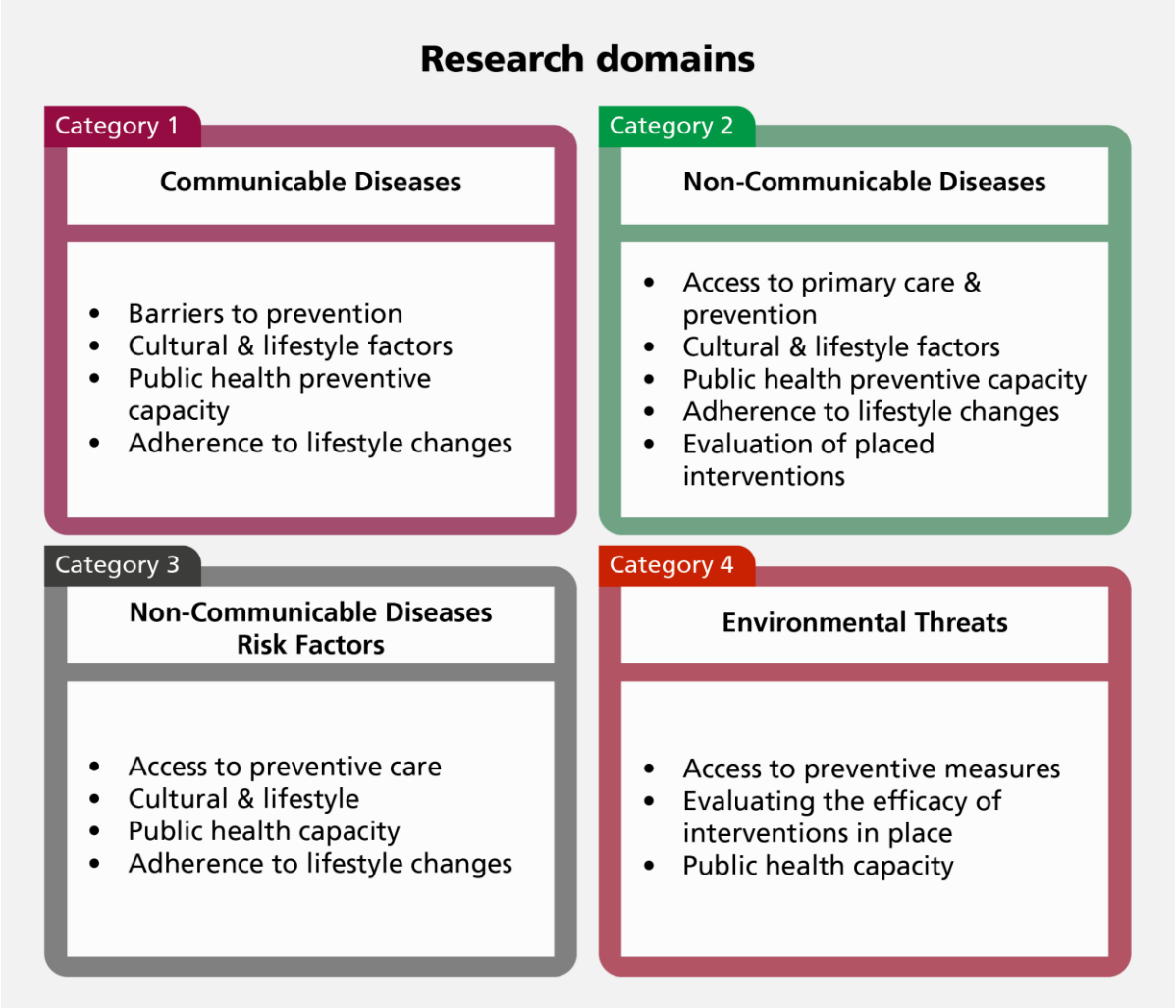

Figure 1: The four categories of prioritization

Secondly, these disease categories were scoped into research dimensions/domains. These domains were driven by the cultural determinants of health, which "impact individuals' health beliefs, behaviours, help-seeking patterns, and health care utilization (2), such as **(access to preventive care, cultural factors, public health capacity, adherence to lifestyle changes, and effectiveness of the intervention in place).**

Various sources, such as literature reviews, systematic review findings, and research consultants' inputs, were used to generate research questions/topics that address the above-mentioned domains related to the four disease categories.

The Gulf CDC conducted a research forum where researchers and academics working in public health fields were invited to participate in rounds one and two of the prioritization process, while round three was conducted through an online survey .

IV. Methods:

Step 1: Adopting the World Health Organization Checklist

The research prioritization exercise was designed using the World Health Organization checklist for priorities setting (2). Health research priority setting helps researchers and policymakers focus on research with the greatest public health impact, but there's no universal best practice due to varying contexts. Based on a literature review of WHO-organized exercises since 2005, a checklist is proposed by Viergever RF, et al. (3) to guide informed decisions on approaches, stakeholder engagement, criteria selection, and ensuring effective implementation and transparency. We have implemented some elements of this criteria such as the use of a tool, having a ranking process, having a criteria, being targeted for implementation (applicability), and relevance to the context .

Step 2: Scoping the Disease Priorities into Research Dimensions:

Research question generation involved a multifaceted approach. After the successful workshop held by the public health policy and programs for public health disease prioritization (1), we have built upon the top disease priorities by addressing various domains related to these diseases. Such as **(access to preventive care, cultural factors, public health capacity, and adherence to lifestyle changes).** These domains were mainly driven by the cultural determinants of health, which "impact individuals' health beliefs, behaviors, help-seeking patterns, and health care utilization" (2). Understanding the interplay of these elements is essential for comprehensive research topic generation. Topics related to accessibility might delve into primary/preventive care reachability, health disparities, and outreach strategies. Cultural dimension considerations could explore the impact of socio-demographic and community practices on disease prevalence. Public health capacity questions might focus on public health infrastructure, preparedness, and policy effectiveness. Lastly, inquiries into adherence to lifestyle changes can explore individuals' challenges in sustaining health-related behaviors. This holistic approach can yield nuanced insights, guiding targeted research efforts for each category. After that, we have created research questions for different research areas, considering that the questions meet a set of criteria.

Step 3: Formulating Research Topics

a. Literature review

A literature review for prevention-based research was conducted to screen the gap in each research domain mentioned in the previous step by using PubMed, google scholar, and in case of unavailable results, we have conducted further search on Google search engines to have an open source of data.

For the eligibility of the studies, We have excluded grey literature and limited-access articles. In case we had difficulties finding an article, we have relied on keywords with searching strategy using (AND, OR) as needed. During that process, we focused mainly on studies that involved healthy participants to screen for the gap in preventive research. The main keywords are illustrated in the tables. The searching strategy has been used for countries in parallel, Ex: (Emirates OR Bahrain OR Saudi OR Oman OR Qatar OR Kuwait) Or individual countries by using quotation marks, Ex: "Bahrain."

b. Systematic reviews

After conducting the literature review, we have developed research topics based on the recommendations of accessible local and international systematic reviews. Systematic reviews are the gold standard for evaluating the current state of scientific knowledge regarding a specific clinical or policy question. Systematic reviews can help in the rapid assessment of the current gap and understanding of research areas with uncertainty or debates. Based on the assessment, research will be identified, and the research question will be initiated more quickly.

c. Consultant recommendation

The consultations involved discussions with subject matter experts in public health. These consultants have a wide range of specialties in the field and more than 15 years of experience in public health research. Some have practical experience in dealing with communicable diseases, non-communicable diseases, epidemiology, and health economics, while others have held various strategic roles in public health and prevention. They helped in adding extra questions to several sections.

Step 4: Building Criteria for Scoring the Research Topics

Published papers were identified to search for criteria that can be used for research priorities. The best one was the article by Rudan, 2016, titled "Setting health research priorities using the CHNRI method: VII. A review of the first 50 applications of the CHNRI method".

The review article included all published papers between 2007 and 2016 and summarized the most important messages that emerged from those experiences. From the review, a list of criteria was made, and after discussion with research consultants, the seven criteria below **(Figure 2).** The 7 chosen criteria were adopted from the review article due to their ability in identifying applied research topics that were both impactful and relevant to the region, In addition to being able to measure their translation-ability to action in public health practice. The research questions are scored based on a 9-point scale, ranging from "not applicable" (score 1.0 to 3.0), to "Uncertain/equivocal" (score 3.1 to 6.0), to "Highly applicable" (score 6.1 to 9.0).

Criteria	Definition	Weight
Effective	To generate/improve truly effective health interventions	10%
Deliverable	Lead to health interventions that will be deliverable within the context	10%
Fills Key Gaps	To fill the key gaps in knowledge that is required for translation and implementation	20%
Maximum Potential Impact on Burden	Theoretical potential to reduce much larger portion of the existing disease burden	20%
Potential for Translation	To generate knowledge that will be translated into health intervention	20%
Feasible	Resource, money, manpower, availability of data and information, and time factor	10%
Priorities	To be aligned with regional priorities	10%
Total 100%		

Figure 2: List of the 7 criteria used for evaluating health research areas with their weight.

Step 5: Consensus Methodology Used for Setting Research Prioritization

The Delphi method (4) is commonly used to develop expert-based judgment about the topic and to establish group consensus. It involves experts scoring various criteria, and then aggregating and discussing differences in these scores. The rounds of the discussion are repeated until a consensus is found. The Delphi technique is especially useful for discussing complex problems or when there is limited topic knowledge. It also allows flexible and context-specific scoring and weighting. To mitigate some of those limitations, the Delphi panels should include multi-disciplinary experts representing all relevant stakeholders. Also, definitions of criteria and scores should be provided to reduce bias.

The Delphi method was reported to be the most common approach used for setting a research prioritization (4). In addition, considering the setting of the planned prioritization workshop, number of participants, time, and resources, a Delphi method was selected.

Participants in the first two rounds came from diverse backgrounds from all 6 gulf countries' ministries of health, while only field experts in (communicable disease, non-communicable diseases, environmental and public health experts) contributed to Round Three **(Figure 3)**.

Figure 3: Gulf CDC research prioritization framework

Figure 4 illustrates the Consensus method rounds of the Delphi. During the first two rounds, **participants from various backgrounds in the ministries of health** from all six Gulf countries contributed to data collection at an interactive forum. We utilized the Mentimeter app to present a suggested list of research topics accompanied by a set of criteria. Participants were able to assess the topics based on the criteria and submit their responses by using a QR code displayed on the screen.

In Round Three, **only field experts** in communicable diseases, non-communicable diseases, and environmental and public health contributed. Insights from these experts were collected through a survey created using an electronic form, which included research domains and top-ranked topics from previous rounds with the option to re-rank **(Figure 4).**

Round	1	2	3
Method	The generated research topics are rated using 7 assessment criteria (refer to Table 1). 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 the 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	Around 20 experts in (NCD, or CD or Environmental Health) **Note:** Each expert performed a separate survey depending on his field.

Figure 4: Consensus method rounds (Delphi)

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Results of the proposed research topics

Communicable Diseases (CD)

Round 1 (Scoring on 9-points scale)

The three highest-scored topics for communicable diseases were the following:

1. **The highest scored topic:** Investigating the factors that influence compliance with preventive measures of antimicrobial resistance". It reached an overall score of 7.6 out of 9.

2. **The 2nd highest scored topic:** Assessing the Economic Impact for Applying Antimicrobial Resistance Interventions, with an overall score of 7.2 out of 9.

3. **The 3rd highest scored topic:** Investigating the challenges to implementing Antimicrobial Resistance Stewardship Programs, with a score of 7.1 out of 9.

Round 2 (Unscaled)

Number	Recommendations
1	Changing the mindset of public health leaders and practitioners from diagnostic, therapeutic, and preventive measures toward the promotion of health.
2	Investing in artificial intelligence for the prevention of Communicable Diseases (CDs).
3	Conducting studies on vaccine-preventable diseases, including coverage, Knowledge, Attitudes, and Practices (KAP), and behavioral aspects related to diseases, vaccine coverage, and vaccine hesitancy.
4	Focusing on disease-specific areas such as Tuberculosis (TB), HIV, Hepatitis, etc.; including KAP studies, public health interventions, and evaluating the effectiveness of health education and health promotion programs.
5	Predicting emerging and re-emerging diseases to enhance preparedness and response.
6	Implementing integrated public health surveillance and governance of public health programs.
7	Assessing healthcare professionals' knowledge about public health and preparedness for emerging health challenges.
8	Modeling the effectiveness of introducing herpes zoster or RSV vaccines in the Gulf region.

Number	Recommendations
9	Predicting the future vulnerability of the Gulf region to new infectious diseases due to urbanization, international travel, and changing environmental conditions.
10	Addressing the current susceptibility of the Gulf region to vector-borne diseases such as dengue fever, malaria, and chikungunya.
11	Mitigating zoonotic diseases in the region, considering proximity to wildlife and traditional animal husbandry practices.
12	Assessing compliance with AMR stewardship programs across healthcare sectors.
13	Targeting the elimination of Sexually Transmitted Diseases (STDs) through effective interventions.
14	Assessing the economic costs of developing in-house assays for emergency cross-country pathogen diversity.
15	Promoting community engagement and social mobilization for better health outcomes.
16	Studying individual attitudes towards using preventive measures while being sick post-pandemic.
18	Investigating compliance with hospital infection control measures.
19	Assessing the availability of current antibiotics and antiviral drugs for infectious diseases.
20	Conducting surveillance of priority infectious diseases and pathogens associated with climate change and assessing the associated risk of AMR.
21	Evaluating the familiarity and comfort levels of health professionals with communicable disease preventive measures.
22	Assessing the effectiveness of regional health programs such as the Wafid program, hepatitis C elimination, HIV, bloodstream infection, and pre-marriage programs.
23	Conducting epidemiological prevalence studies to examine the occurrence of rare vector-borne diseases.
24	Assessing awareness regarding the proper use of antimicrobials in correlation to social determinants, in both humans and animals.

Table 1: Communicable diseases list of recommended priorities

Round 3 (refining the previous results)

a. The ranking result for research domains of Communicable Diseases:

1 **The 1st ranked research domain:** to investigate the public health capacity of preventing CD.

2 **The 2nd ranked research domain:** to investigate the cultural factors and social determinants of health related to the prevention of communicable diseases.

3 **The 3rd ranked research domain:** to assess the effectiveness of public health interventions placed for communicable diseases.

b. The ranking result for research topics of Communicable Diseases:

1 **Investigating the Challenges to Implementing Antimicrobial Stewardship Programs.**

2 **Assessing the Economic Impact for Applying Antimicrobial Resistance Interventions.**

3 **Examining the Environmental Conditions Impact on the Prevalence and Relocation of Vectors in the Gulf Region.**

Figure 5: The ranking result for research topics of Communicable Diseases

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Results of the proposed research topics

Non-Communicable Diseases (NCD)

Round 1 (Scoring on 9-points scale)

The highest 3 scored topics for Non-Communicable Diseases were the following:

1 **The highest scored topic:** Evaluating the capacity and readiness of the public health system to effectively prevent NCDs, with an overall score of 7.9 out of 9.

2 **The 2nd highest scored topic:** Exploring the factors which influence individuals' commitment to lifestyle changes for the prevention of NCDs" with an overall score of 7.6 out of 9.

3 **The 3rd highest scored topic:** Evaluating the barriers and challenges for accessing NCD preventive services, with a score of 7.2 out of 9.

Round 2 (Unscaled)

Number	Recommendations
1	Exploring the impacts of collaboration between local healthcare and public health organizations.
2	Assessing the impact of e-Health on the quality of preventive programs.
3	Evaluating the effect of lifestyle modification on the prevention of diabetes.
4	Surveilling workforce capacities in marketing for digital tools in Non-Communicable Diseases (NCDs) and associated risk factors prevention and control.
5	Conducting more studies on mental health issues.
6	Assessing medical adherence for patients with NCDs.

Number	Recommendations
7	Implementing addiction screening services.
8	Addressing eating disorders through comprehensive studies.
9	Exploring the readiness of healthcare systems to prevent bullying as an emerging public health issue.
10	Utilizing the Service Availability and Readiness Assessment (SARA) tool for musculoskeletal disorders.
11	Assessing different strategies for promoting chronic disease self-management for better health outcomes.
12	Investigating the impact of early screening of mental disorders among children on the quality of education and quality of
13	Developing registries of Non-Communicable Diseases (NCDs) for better data management and analysis.

Table 2: Non-Communicable diseases list of recommended priorities

Round 3 (refining the previous results)

a. The ranking result for research domains of Non-Communicable Diseases (NCD):

1 **The 1st ranked research domain:** Evaluating the Efficacy and Effectiveness of Interventions in Place Related to NCDs.

2 **The 2nd ranked research domain:** Population Adherence to Behavioural Changes (Ex: challenges individuals face in sustaining health-related behaviours').

3 **The 3rd ranked research domain:** Cultural Factors and Social Determinants of Health (Ex: impact of sociodemographic and community practices on disease prevention)

b. The ranking result for research topics of Non-Communicable Diseases (NCD):

1 **Evaluating the Capacity and Readiness of the Public Health System in the Gulf Region to Effectively Prevent NCDs.**

2 **Exploring the Factors which Influence Individual's Commitment to Behavioural Changes for the Prevention of NCDs.**

3 **Investigating the Barriers to Accessing Preventive Services for Individuals who are at High Risk of NCDs in the Gulf Region.**

Figure 6: The ranking result for research topics of Non-Communicable Diseases

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Results of the proposed research topics

Non-Communicable Diseases (NCD) Risk Factors

Round 1 (Scoring on 9-points scale)

The highest 3 scored topics for Non-Communicable Diseases Risk Factors were the following:

1 **The highest scored topic:** Exploring the gender-specific barriers to practicing physical activity, with an overall score of 7.5 out of 9.

2 **The 2nd highest scored topic:** Evaluating the effectiveness of interventional behavioural model in reducing the use of cigarette, with an overall score of 7.5 out of 9.

3 **The 3rd highest scored topic:** Investigating the seasonal pattern and variations of physical activity among the Gulf population, with a score of 7.2 out of 9.

Round 2 (Unscaled)

Number	Recommendations
1	Exploring unhealthy dietary patterns according to age groups.
2	Assessing the capacity of physical activity assessment among physicians for weight management.
3	Evaluating the effectiveness of NCD risk factors awareness campaigns.
4	Assessing the impact of available public health programs.

Number	Recommendations
5	Determining the most effective diet to lose weight in terms of diet quality.
6	Investigating childhood obesity and the effectiveness of school-based interventions.
7	Evaluating the effect of hormonal imbalances on obesity.
8	Assessing stress and its implications on quality of life.
9	Evaluating services for the elderly and the effect of mental health on their quality of life.
10	Focusing on the interventions and their effectiveness in reducing the burdens of Cardiovascular Disease (CVD), cancer, diabetes, and obesity.

Table 3: Non-Communicable diseases risk factors list of recommended priorities

Round 3 (refining the previous results)

a. The ranking result for research domains of Non-Communicable Diseases Risk Factors:

1. **The 1st ranked research domain:** Evaluating the efficacy and effectiveness of interventions in place related to NCD Risk Factors.
2. **The 2nd ranked research domain:** Population adherence to Behavioural changes (Ex: challenges individuals face in sustaining health-related behaviours').
3. **The 3rd ranked research domain:** Cultural factors and social determinants of health (Ex: impact of sociodemographic and community practices on disease prevention).

b. The ranking result for research topics of Non-Communicable Diseases Risk Factors:

1. **Evaluating the effectiveness of interventional behavioural model in reducing the use of cigarette.**
2. **Exploring the gender specific barriers to practicing physical activity.**
3. **Investigating the seasonal patterns and variations of physical activity among the gulf population.**

Figure 7: The ranking result for research topics of Non-Communicable Diseases Risk Factors.

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Results of the proposed research topics

Environmental Threats

Round 1 (Scoring on 9-points scale)

The highest 3 scored topics for Environmental Threats were the following:

1 **The highest scored topic:** Evaluating the effectiveness of road safety campaigns and interventions aimed at reducing road traffic injuries, with an overall score of 7.0 out of 9.

2 **The 2nd highest scored topic:** Investigating the impact of safety culture within communities on the prevention of road traffic injuries, with an overall score of 6.6 out of 9.

3 **The 3rd highest scored topic:** Investigating how staffing levels and workload management impact the prevalence of occupational burnout, with a score of 6.6 out of 9.

Round 2 (Unscaled)

Number	Recommendations
1	Assessing all measures needed to prevent road traffic accidents.
2	Developing and evaluating workplace health promotion programs, interventions, and best practices to promote healthy behaviors, prevent chronic diseases, and improve overall worker well-being.
3	Evaluating the effectiveness of road safety and injury prevention measures.
4	Assessing the effect of climate change and increased sun temperature on occupational health.
5	Researching water consumption, treatment, and disposal.

Number	Recommendations
6	Addressing environmental health challenges in the GCC region.
7	Preparing for chemical hazards and environmental emergencies.
8	Assessing the impact of climate change on health.
9	Monitoring and studying the effects of climate change and air pollution.
10	Evaluating health waste care and conducting risk assessments for food handlers.
11	Establishing occupational health standards suitable for GCC regions.
12	Considering the risk factors and occupational mental health related to office jobs.
13	Studying the epidemiology, etiology, and prevention of occupational diseases and chronic health conditions, including respiratory diseases, musculoskeletal disorders, cardiovascular diseases, cancers, and infectious diseases. Identifying high-risk occupations and exposures.
14	Identifying and characterizing emerging occupational hazards, including new technologies, materials, processes, and work arrangements such as nanomaterials, 3-D printing, telecommuting, and gig economy work.
15	Evaluating road safety and injury prevention measures.
16	Evaluating the most effective methods of cooperation between the Ministry of Health and the Ministry of Interior/Traffic Department for road safety.

Number	Recommendations
17	Assessing the risk factors for heavy-duty workers, such as firemen and emergency medical services.
18	Investigating injuries caused by long-term sitting at work and its association with chronic diseases.
19	Evaluating the effectiveness of injury prevention strategies in the GCC region.
20	Assessing methods for preventing drowning, violence, and falls.
21	Addressing road safety studies and widespread campaign efforts.
22	Assessing farmers' exposure to pesticides in agricultural settings.
23	Routinely monitoring water quality, air quality, and chronic lead exposure.
24	Evaluating the effect of climate change on health and the increase in the prevalence of priority pathogens associated with environmental changes, such as temperature, winds, and air quality.

Table 4: Environmental threats list of recommended priorities

Round 3 (refining the previous results)

a. The ranking result for research domains of environmental threats:

1. **The 1st ranked research domain**: Evaluating the efficacy of interventions in place related to Environmental threats.
2. **The 2nd ranked research domain:** Public health capacity (Ex: Assessing the capacity of having registries that quantify type and cause of injuries, or capacity to avoid environmental threats).
3. **The 3rd ranked research domain:** Access to preventive measures (Ex: workplace risk management).

b. The ranking result for research topics of environmental threats:

1. **Evaluating the effectiveness of road safety campaigns and interventions aimed at reducing road traffic injuries.**
2. **Exploring the effectiveness of risk communication strategies in the workplace and how they affect injury.**
3. **Investigating the impact of safety culture within communities on preventing road traffic injuries.**

Figure 8: The ranking result for research topics of Environmental Threats .

Conclusion:

This report outlines the Gulf CDC's comprehensive strategy for establishing research priorities tailored to the specific health challenges of the Gulf region. It identifies critical research areas in communicable diseases, non-communicable diseases, and environmental threats through a structured and participatory process.

In the area of communicable diseases, the report prioritizes antimicrobial resistance (AMR) as a top concern, placing particular emphasis on understanding the obstacles to implementing stewardship programs and evaluating the economic impact of AMR interventions. These priorities reflect the urgent need to strengthen public health capacities to effectively address AMR.

For non-communicable diseases (NCDs), the report underscores the importance of evaluating the capacity and readiness of the public health system to prevent NCDs, exploring the factors influencing lifestyle changes, and addressing barriers to accessing preventive services. This focus aims to enhance the public health infrastructure and promote healthier behaviors across the population.

Regarding environmental threats, the report prioritizes the evaluation of road safety campaigns and interventions, recognizing the high burden of road traffic injuries in the region. It also emphasizes the need to understand the impact of safety culture and explore the factors contributing to occupational burnout and other work-related health issues.

The methodology used in this prioritization process, including the Delphi technique and systematic review, ensured a valid and transparent selection of research topics. Nonetheless, the report acknowledges certain limitations, such as the reliance on expert input from ministries of health and academic institutions, which may not fully represent the broader community perspective.

Overall, this report provides a strategic framework for guiding future research efforts in the Gulf region, aiming to help institutions focus on the most impactful and relevant health issues. By addressing these priorities, the Gulf CDC aims to cultivate a robust research environment that contributes to improved public health outcomes and advances the region's capacity to respond to its most pressing health challenges.

References

1- Alfawaz, R., Alhumud, R., Amato-Gauci, A. J., & Penttinen, P. (2024). Public health priorities for the Gulf states. The International Journal of Health Planning and Management. https://doi.org/10.1002/hpm.3797

2- Rice, Z.S. and Liamputtong, P. (2023) 'Cultural determinants of health, Cross-Cultural Research and Global Public Health', Handbook of Social Sciences and Global Public Health, pp. 1–14. doi:10.1007/978-3-030-96778-9_44-1.

3-Viergever, R.F. et al. (2010) 'A checklist for Health Research Priority Setting: Nine common themes of good practice', Health Research Policy and Systems, 8(1). doi:10.1186/1478-4505-8-36.

4- Yoshida, S. (2015) 'Approaches, tools and methods used for setting priorities in health research in the 21st Century', Journal of Global Health, 6(1). doi:10.7189/jogh.06.010507.

5- Rudan, I. et al. (2017) 'Setting Health Research Priorities using the CHNRI method: VII. A review of the first 50 applications of the CHNRI method', Journal of Global Health, 7(1). doi:10.7189/jogh.07.011004.