Health Research Priority List (2019-2023)

Ministry of Health

Thimphu Bhutan

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1. Introduction

Health research priority setting identifies the priority areas for research to maximize the benefit of the health service delivery, reduce duplications, improve collaboration, and enhance resource allocation. Defining the priority setting processes strengthens the outcome of such exercises and guide in upholding the uniformity. Numerous approaches and country specific designs have been developed depending on the specific context. However, there is no universal accepted methodology for priority setting exercise and thus countries usually use methods adapted through combination of the tested priority setting methodologies to suit their context.

In Bhutan, the Ministry of Health (MoH) in collaboration with the Khesar Gylelpo University of Medical Sciences, has conducted priority setting exercises since 2014. The exercise used Essential National Health Research (ENHR) method of priority setting. Subsequently, in 2017, another round of exercise was conducted to pilot the systematic process of priority setting developed by combination of two different priority setting models of ENHR and CAM. Based on the recommendations and lessons learnt during the two phases of pilot testing, this method was further modified and refined to suit the country context in 2018 which was endorsed during the 51st High Level Committee meeting, the highest decision-making body in Ministry of Health.

2. Objectives of Research Priority Exercise

Health research priority exercise aims to:

- gain consensus among the stakeholders about areas where research effort will have wider benefits in achieving the health outcomes
- set priority among the identified health research areas for judicious use of resources

3. Methodology

3.1 Pre-workshop preparation

3.1.1 Preliminary list compilation

The preliminary list of all the planned researches or that are of importance to the MoH and allied agencies was compiled by the Research Section of the MoH using a standard template (Table 1). The list was then circulated to all stakeholders for their review and feedbacks. A total of 185 research areas were generated to be considered for the priority setting exercise.

Table 1: Format for collection of priority research topics from each program under ministry of heatlh and allied health agencies

Programme:				
Sl. No.	Title and year of Inception	Budget (Approximate)	Status (Completed/ongoing/planned) and thematic studies conducted	Policy or practice changes

3.1.2 Formation of Technical Working group

Technical Working Group (TWG) was formed with the representatives from all the relevant stakeholders. Some of the prominent researchers were also called for the workshop, providing a rich insight during the workshop. During the previous pilot workshops, it was recommended that its essential to ensure the inclusion of more stakeholders through pre-workshop organization and scheduling. The participants also recommended to include health care workers from different areas

of work and Civil Society Organizations during the past exercises. Thus, the TWG was comprised of officials from various backgrounds and organizations (Table 2).

Table 2: TWG representatives during the priority setting exercise, 2019

1. Faculty of Post-graduate Medicine, Khesar Gyalpo University of Medical Sciences (KGUMSB), Thimphu Bhutan
2. Medical Education Centre for Research Initiatives, KGUMSB, Bhutan
3. Department of Traditional Medicine Services, Ministry of Health, Bhutan
4. HMIS and Research Hection, Ministry of Health
5. Research Ethics Board of Health, Bhutan (REBH)
6. Faculty of Traditional Medicine
7. Bhutan Kidney Foundation, Civil Society Organization
8. Faculty of Nursing and Public Health, KGUMSB, Bhutan
9. Department of Public Health, Ministry of health
10. Department of Livestock, Ministry of Agriculture and Forests, Bhutan
11. Bhutan Medical and Health Council
12. Policy and Planning Division, Ministry of health
13. Jigme Dorji Wangchuck National Referral Hospital (JDWNRH)
14. Department of Medical Services, Ministry of health
15. Royal University of Bhutan (RUB), Bhutan

3.1.3 Literature review and baseline data/trend

A thorough literature search was conducted by the research section of MoH to ascertain the importance of each topic and to provide insight into each of the identified priority research areas. It was important to understand the availability of literatures, ultimately to be utilized during the priority setting exercise in step 2.C and 2.D.

Health Prevention		Burden (prevalence, incidence, proportion, number, etc)	Others
1	Causes of neonatal, infant, and under five mortality	NMR=21 per 1000 live births (NHS2012)	IMR=30.0 per 1000 live births (NHS 2012)

	IMR=15.1 per 1000 live births (PHCB 2017) U5MR=34.1 per 1000 live births (PHCB 2017)	U5MR=37.3 per 1000 live births (NHS 2012)

Table 3: Format for collection of information on burden of disease through literature search for each priority research topics submitted by program under Ministry of Health and allied agencies

During the previous exercises, the participants mentioned the need for exhaustive literature search and to share the list to the participants prior to exercise. However, owing to the limited time, the literature review was carried out research section of MoH to study the burden each of the identified priority area. The list was presented to the participants during the exercises which included the health-related research that had been carried out in the past five years by ministry of health and individuals in Bhutan, and research projects planned or proposed for the next FYP.

3.2 Priority setting exercise

3.2.1 Phase 1: Health research priority identification phase

During this phase, the main activity was to identify the list of health research areas that needs to be included in the exercise. While the compiled list consisted of 185 research areas, many of them were found to be duplicating. The priority setting exercises reviewed all the research areas and categorized into three distinctive broad categories: Public Health Protection, Health Service Delivery and, Health Policy and Systems.

Information dissemination phase	: Presenting an overview of health-related research that had been carried out in the past five years by the Ministry and individuals in Bhutan, research projects planned or proposed for the next FYP and a brief overview of the last priority setting exercise conducted in Bhutan in 2014.
Formation of Groups	The TWG members were divided into three groups 1. Public Health Protection, 2. Health Service Delivery and

3. Health Policy and Systems

The grouping was based on the relevance and their knowledge.

Health research priority identification phase	: Participants were split into three groups based on subject expertise to identify general priority research areas within their domain. Each group began by reviewing a list of potential health research topics and the knowledge gaps around those topics.
Draft ranking and plenary discussion	: Research topics were ranked by priority as high priority, moderate priority, or low priority. These first draft of ranking was presented to the whole group in plenary and an extensive discussion was held to further refine the list. Lists were then revised into a second draft form. The presentation and discussion processes were repeated and the group selected high priority research topics from across the three domains (Table 1) for full scoring in the next step

Table 4: Steps for health research priority setting

Each of the idenfied research area was ranked into 3 categories of low, medium and high importance using a standard table (table 5). The group identified 51 broad areas in 3 different areas of Public Health Protection (promotion and prevention), Health Service Delivery and, Health Policy and Systems . The first draft was presented to the TWG in plenary and an extensive discussions were held to refine the list. All those ranked as high priority was taken for the final ranking in the Phase 2.

Table 5: Standard format for categorizing the compiled list into low, medium and high importance

No.	Health promotion and prevention			Health service Delivery			Health system and policy		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
1.									
2.									
3.									

3.2.2 Phase 2: Final ranking of the priority areas

During the second phase, the TWG members were re-grouped into the three categories with equal representation from each of the groups formed in phase 1. This method ensured the diverse contribution by sharing the reasons discussed during the phase 1. The groups then scored each area using the approved criteria (Table 6).

Table 6:

Mixing groups and scoring.	Representatives from each of the three expert areas were placed into new scoring groups. Each scoring group completed the scoring framework as in Table 2 for the high priority topics in each of the three expert areas. Topics were scored using a Likert-type 3-point scale.
Calculate results and break ties	Mean priority scores, standard deviation, and mean confidence scores were calculated for each of the research areas by compiling the scores of all scoring groups (Table 3). This was done so that comparisons could be made across the three groups and to break ties. The standard deviation represents how much the group scores differ from the mean score, therefore represents the level of consensus. A lower SD represents close agreement across scoring groups and a higher SD represents wide disagreement across scoring groups. Final ranking was by mean priority score, and in case of a tie in priority scores, IQR was used to break the tie. In case of tied priority scores and SD, highest mean confidence was used to prioritize.

The groups scored each area using the criteria specified in the table. Priority scores, standard deviation, and mean confidence scores were calculated for each of the research areas by compiling the scores of all scoring groups. This was done so that comparisons could be made across the three groups and to break ties. The standard deviation represents how much the group scores differ from the mean score, therefore represents the level of consensus. A lower SD represents close agreement across scoring groups and a higher SD represents wide disagreement across scoring groups. Final ranking was done by mean priority score, and in case of a tie in priority scores, SD was used to break the tie while mean confidence was used during the tied SD. However, there were no situation in which the SD was tied and thus only SD was used.

HIGH PRIORITY HEALTH RESEARCH TOPIC

	1	2	3	SCORE	CONFIDENCE
Magnitude of the health problem	Affects few people	Affects moderate number of people	Affects high number		
Severity of Health Problem	Low severity	Moderate severity	High severity		
Community concern/demand	limited or no concern	moderate concern	high concern		
FEASIBILITY	1	2	3		
Existing knowledge on the topic	A lot is known	Moderate amount is known	Little is known		
Local research capacity	Limited local research capacity	Moderate research capacity	High research capacity		
IMPACT	1	2	3		
Research utilization:	Low likelihood	Moderate likelihood	High likelihood		
Economic impact	Low economic impact	Moderate economic impact	High economic impact		
Sustainability: likelihood of long-term impact	Low likelihood	Moderate likelihood	High likelihood		

Result: Health research priority list for 2019-2023

Based on the results of the scoring by each group, the following dimensions were calculated for each topic. As per the directives received from the HLC, the final ranking and selection of 30 top priority areas were conducted using proportionate selection method using the following formula from each broad areas;

$$Xn(s) = \frac{Xn(t)}{total\ number\ of\ topics} X30$$

Where, Xn(s): number of areas to be selected in each category

Xn(t): total number of areas in each category

Using this formula, following was derived;

Sl.No	Broad Area	Xn(t)	Xn(s)
1	Public Health promotion and prevention	19	11
2	Health Policy and System	14	8
3	Health service delivery	18	11
	total	51	30

The draft list was presented to HLC during its emergency meeting held in September 2019 and endorsed as the final Health Research Priority List for 2019-2023 (Table 7).

Sl no	Research Topics
1	Nutritional Status and Dietary Assessment- Micronutrient intake assessment (Growth Monitoring using WHO standard) and Dietary diversity
2	Cardiovascular Diseases, Kidney Diseases and NCDs including burden, causes, determinants
3	Child Health: Mortality and Morbidity including developmental delays
4	Mother and Neonate: Mortality and Morbidity including infertility, abortion, GDM, Trophoblastic neoplasia, birth defects, GBS…
5	Four Common cancers: gastric, colon, cervical s and oral cancer including epidemiology and determinations

6	Mental Health disorders including suicide (prevention and interventional studies)
7	Burden on informal care givers with chronic diseases including disabilities
8	Other form of cancers: Burden
9	Antimicrobial Resistance: Including Epidemiology of MDR-TB, Leprosy
10	HIV and STIs
11	Food safety including irrational use of pesticides and chemicals
12	Universal health care coverage including barriers
13	procurement and management of bio-medical equipment's
14	Referral system in Bhutan (inside and outside)
15	evaluation of public health programs and services
16	Integration of traditional and allopathic medicines: in addressing NCD and mental health burden
17	Human resource for health: work-load assessment, competency, projections and forecast of the health workers, training needs assessment, job satisfaction and motivation of HCWs
18	Healthcare financing: out of pocket expenditure, catastrophic health expenditure, sustainability of public finance for health care, health care costing
19	Domestic production of Medicines, medical supplies and sustainability of medicinal plants
20	Assessment of performance and safety of medical equipment and technologies
21	Patient-Provider interaction and relationship including Patient centered care
22	Palliative care (social, cultural, religious, sowa rigpa practices)
23	Physiotherapy and rehabilitation services: community based, ICUs, functional outcome and quality of life improvement, assessment of the rehabilitation services
24	Patient safety and quality assurance (1. Medical Errors, 2. Hospital acquired infections (HAIs), 3. Medical and bio medical Waste Management, 4. Length of stay, 5. Rationale of medicine, 6. Follow up action on

	incidents for prevention 7. Documentation 8. Burden and prevalence of wound infection (surgical site infection))
25	Traditional Knowledge: Local Healing Practices
26	Hospital Acquired Infections (Infections after surgery during health camps…)
27	Blood Bank Services (screening, requisition, utilization, complications and awareness)
28	Infectious disease related studies - prevalence burden, screening and treatment
29	Eye Health (prevalence of cataract, corneal blindness ....)
30	Emergency Medical Response and Services during disasters and public health emergencies

Table 7: Final list health research priority for 2019-2023

4. Conclusions and recommendations

The research priority setting exercise has identified 30 health research priority areas for the period of 2009-2023. It is expected that the health research priority list will help to guide the decision makers to use the limited resources in more judicious and effective manners for better health outcomes. It was also learnt that the systematic process of priority setting developed by combination of two different priority setting models of ENHR and CAM models was an effective tool to be used in low resource setting like Bhutan. However, there is need consider following recommendations for better application of the tools in the future:

1. Sharing of the list with the TWG prior to the exercise; The list needs to be shared with the TWG members prior to the exercise. This will enable the members to do thorough literature search and gather information and insight of each priority areas.
2. Monitoring; while the priority areas are defined, a monitoring of the areas needs to be defined and updated at the end of each year. This shall specify when the next priority exercise should be conducted.

5. Appendixes

Appendix 1

	Public Health promotion and prevention	Average Confidence	Average Score	SD	Final Rank
1	Mother and Neonate: Mortality and Morbidity including infertility, abortion, GDM, Trophoblastic neoplasi, birth defects, GBS etc	3.00	21.6667	1.1547	4
2	Child Health: Mortality and Morbidity including developmental delays	3.00	21.6667	0.57735	3
3	Four Common cancers: gastric, colon, cervical s and oral cancer including epidemiology and determinations	2.67	21.3333	1.1547	5
4	Other form of cancers: Burden	3.00	19.6667	1.52753	8
5	Mental Health disorders including suicide (prevention and interventional studies)	2.67	20.6667	2.51661	6
6	Harmful use of alcohol and tobacco (possibly with cross-sectoral collaboration)	2.33	18.6667	1.1547	13
7	Studies on Vaccine Seroconversion; efficacy, AEFI, Complaince, preceived benefits	2.00	16.3333	2.51661	18
8	Nurtitional Status and Dietary Assessement-Micornutrient intake assessment (Growth Monitoring using WHO standard) and Dietary diversity	3.00	22	1	1
9	Environmental Health: Climate Change and Climate-senstive diseases including malaria, malaria parasites, dengue and chickeng	2.67	17.3333	4.04145	16

10	Road traffic accidents including determinants, prevalance, PTSD	2.67	19	4.58258	12
11	Anitmircobial Resistance:Including Epidemiology of MDR-TB, Leprosy	2.67	19.6667	3.05505	9
12	Cardiovascular Diseases, Kidney Diseases and NCDs incluing burden, casues, determinants	2.67	22	2.64575	2
13	Zoonotic Diseases including (Modelling the environmental suitability, genotype analysis and risk of Bacillus anthracis infection in livestock, wildlife and human infection in Bhutan.	2.00	12.3333	8.96289	19
14	HIV and STIs	2.33	19.6667	3.51188	10
15	Screening of students for Oral health, eye, ENT	2.33	17.3333	3.21455	15
16	Burden on informal care givers with chronic diseases including disabilities	2.67	20.6667	3.21455	7
17	Epidemiology and causes of death	2.33	17.6667	4.16333	14
18	Food safety including irrational use of pesticides and chemicals	2.33	19.3333	2.51661	11
19	water, sanitation and hygiene	2.67	17	1.73205	17

Appendix 2

	Health Policy and System	Average Confidence	Average Score	SD	Final Rank
1	Impact of decentralisation on health sector performance (50:50 budget allocation in 12 th FYP)	2.33333	14	5.2915	14
2	Referral system in Bhutan (inside and outside)	2.66667	21.6667	4.04145	3

3	Health system: Role of private sector, public perception on private practice, Role of village health workers in primary health carH	2.33333	15.6667	2.51661	13
4	Integration of traditional and allopathic medicines : in addressing NCD and mental health burden	2.66667	20.6667	3.05505	5
5	Human resource for health: work load assessment, competency, projections and forecast of the health workers, training needs assessment, job satisfaction and motivation of HCWs	3	20.3333	4.04145	6
6	Domestic production of Medicines, medical supplies and sustainability of medicinal plants	3	20	1	8
7	Health information : Availability, reliability and utilization	2.66667	20	3.60555	10
8	Digital Health : telemedicine, e-PIS, HIS and HMIS and other information system	2.33333	19.6667	1.52753	11
9	Universal health care coverage including barriers	3	22	1.73205	1
10	Healthcare literacy and care seeking behaviour including impact of sociocultural and economic factors	2.66667	20	1.73205	9
11	Healthcare financing : out of pocket expenditure, catastrophic health expenditure, sustainability of public finance for health care, health care costing	2.33333	20.3333	5.50757	7
12	Change in fertility intention of young adults : family planning services, work stress, determinents	2.33333	15.6667	1.52753	12
14	procurement and management of bio-medical equipments	2.33333	21.6667	3.21455	2
15	evaluation of public health programs and services	3	21	3	4

Appendix 3

Health service delivery	

		Average Confidence	Average Score	SD	Final rank
1	Inter and Intra disciplinary collaboration in patient management (lack of coordination and collaboration)	2.66667	20.3333	3.21455	14
2	Patient safety and quality assurance (1.Medical Errors, 2.Hospital acquired infections (HAIs), 3.Medical and bio medical Waste Management, 4.Length of stay, 5.Rationale of medicine, 6.Follow up action on incidents for prevention 7.Documentation 8.Burden and prevalence of wound infection (surgical site infection))	3	22.3333	2.08167	5
3	Patient-Provider interaction and relationship including Patient centred care	3	22.6667	2.3094	2
4	Palliative care (social, cultural, religious, sowa rigpa practices)	2.66667	22	2	3
6	Traditional Medicine services in health care (Efficacy and effectiveness, utilization, documentation,herbal garden, wellness Services utilisation , new formulation)	2.66667	18.3333	2.08167	18
7	Aging and geriatric care	2.33333	19	5	17
8	Anti-microbial resistance (burden, antibiotic consumption pattern, irrational use of higher generation of drugs and antibiotics, trend of antibiotic susceptibility pattern, KAP among the providers and the users)	2.33333	19.6667	4.16333	12
9	Eye Health (prevelance of cataract, corneal blindness ....)	2.33333	20.3333	3.78594	10
10	Evaluation of Bhutan Aero-Medical Evacuation System	2.33333	17	1.73205	16

11	Emergency Medical Response and Services during disaters and public health emergencies	2.33333	18.6667	3.78594	11
14	High altitude medicines including morbidity and mortality	2	14.3333	1.52753	15
15	Infectious disease related studies - prevelance burden, screening and treatment	2.33333	20	3.4641	9
15	Helicobacter pylori infection- burden, screening and treatment	2.66667	18.3333	4.50925	13
17	Hospital Acquired Infections (Infections after surgery during health camps etc)	2.66667	21	4.3589	7
18	Blood Bank Services (screening, requisition, utilization , complications and awareness)	2.33333	16.6667	1.52753	8
19	Traditonal Knowledge: Local Healing Practices	2.33333	19.3333	4.16333	6
20	Physiotherapy and rehabilitation services: community based , ICUs, functional outcome and quality of life improvement, assessment of the rehabilitation services	2.66667	21.6667	2.3094	4
21	Assessment of performance and safety of medical equipment and technologies	2.66667	22.6667	1.52753	1