Necessity of 'Health Technology Assessment (HTA)' in Bangladesh: Evidence-based Decision Making

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ABSTRACT

Introduction: Health Technology Assessment (HTA), a systematic and explicit method to evaluate the properties and effects of health technology (including drug, device & human resource), is a cost-effective resource allocation tool in healthcare decision-making processes. It is an effective tool for achieving Universal Health Coverage (UHC) that currently supports routine decision making for health system planning and operational policy in low and middle income countries like Bangladesh. Thus this study aims to explore the necessity of Health Technology Assessment in Bangladesh to support evidence-based Decision Making.

Methodology: This was a qualitative research conducted from 01.12.2022 to 31.05.2023 involving Government Health Managers of different tiers, Academicians, Regulatory and Governing bodies of health professionals, Decision and Policy Makers. In this research, Key Informant Interviews (KII) and Focus Group Discussion (FGD) were carried out among them through face-to-face interviews using tape recorder. The audio data were transcribed verbatim into Microsoft Word with data analysis conducted using thematic analysis approach.

Results: Most respondents are aware of Health Technology Assessment (HTA). According to the respondents, Health Technology is an umbrella phrase for everything relevant to our healthcare system and the delivery of healthcare services. Almost all of them agreed that service delivery will improve if we employ HTA correctly at the community, district, and national levels. According to the responders, clinical effectiveness and patient benefit would surely improve with HTA. Respondents believe that integrating physicians in HTA will help to improve clinical guidelines and clinical practice. Quality will be improved in the areas of patient safety, medication safety, and antibiotic resistance. At the same time, patient satisfaction must be ensured at the lowest feasible cost through HTA. One of the obstacles in HTA is the implementation of a newer system.

Conclusion: Health technology, according to the respondents, is an innovation or intervention that allows us to improve healthcare delivery by updating medical device, medicine, vaccine, investigation, procedure, human resources, and health information system. Country will be able to develop cost-effective management using HTA, and patients will profit more from it. HTA may be used as a cost-effective decision-making tool in planning and budgeting. HTA will surely have an influence on the quality of our healthcare delivery if it is implemented efficiently and methodically.

METHODOLOGY:

Study Design:

This study employed cross sectional design with a qualitative approach for exploring the necessity of Health Technology Assessment (HTA) in Bangladesh to support evidence-based Decision Making.

Study Place and Period:

The study sites of this study were selected purposively. Director General Office of health services, Academic institutions, Tertiary hospitals of Dhaka city and Civil Surgeon Office of four districts were selected purposively. The data collection of the study was done in April 2023.

Study Population and Sampling: For this current study, purposive sampling technique was adopted. Total 20 KII were conducted from following categories in selected facilities

Officials of DGHS & DGME

- Academicians & Public Health Experts
- Regulatory and Governing Bodies of health professionals
- Decision and Policy Makers
- District Health Managers

Along with that, one FGD was also conducted among 9 (Nine) Upazila Health and Family Planning officers (UH&FPOs') of the selected Upazila

Data Collection:

Before commencement the qualitative interview with the respondents, interview guideline for Key Informant Interview (KII) were developed in English which were translated into Bangla for better utilization during interview for collecting clear and quality data. Each interview (KII) lasted for 30-45 minutes and was moderated in Bangla, the native language of both the respondents and interviewer. However, the timespan of the interview also depended on respondent's preferences. The tools which were used for interview were pre-tested. Before pertaining to the interview, the research objective and interest were explicitly explained to the respondents and any kind of leading questions were tried to avoid. It was also tried to build a good rapport with the respondents through few icebreaking questions so that respondents could be enough open up during answering any questions related to the research objective.

Data Processing and Analysis:

The KII were recorded with permission from the respondents. Those audio files were downloaded, and the researchers responsible for transcription followed the field notes and audio file during transcription. Thus, the verbatim transcription came into a word-processed text file. The members of the research team listened to the audio and checked the transcription thoroughly and participated in transcription if anything found missing according to the audio clip. Different a priori codes were developed according to the KII guidelines. A priori codes also had many sub-codes. Transcripts were coded according to the code book through which data were clustered, compared and categorized under each theme. Necessary editing and tightening of codes were conducted. Extracted codes from entire data set were placed under specific themes and those themes were analyzed.

Data validity check was completed through triangulation. Data triangulation, methodological triangulation was checked by comparing the data derived from KII. Two researchers independently coded separate transcripts to assess the acceptability of codes and any differences were resolved through iterative discussion between them. A third researcher then validated these data. All the quantitative data were entered in Microsoft Excel. The data were cleaned and then analyzed for frequency distribution.

STUDY FINDINGS

Understanding of Health Technology

KII respondents provided instances of HT from their personal experiences. Consider biomedical technology, which is employed in the field to treat patients. It is modern and up-to-date technology that is

beneficial to the health field. Behind the machine lies not just technology, but also skilled labor. Many invasive procedures, such as cardiology, laparoscopy, and cystoscopy, need the use of technology.

FGD respondents provided instances of HT from their personal experiences. At the root level, they use computers, the internet, and other communication technologies for monitoring the patient. It helps them to provide quality healthcare services to them and they think it is a good example of HT. Robotic surgeries like things are beyond imagination at the UHC level. What they understand is, HT means what they can adopt in their UHC according to their manpower, feasibility, and availability which should be cost-effective.

Understanding of Health Technology Assessment

Most respondents are aware of Health Technology Assessment (HTA). According to them, it is critical for Bangladesh since it has a significant positive influence. Health technology must be upgraded to meet the SDG target of "no one left behind." HTA is a multidisciplinary approach which is an evaluation and monitoring system that is needed to understand what the technology was like before it came in and what improvements have been made by working with this technology.

HTA is a system that helps to improve our surveillance and assessment of the health system. In remote locations, drugs, and gadgets are insufficient. We have a scarcity of trained human resources. According to admitted patients, the quantity of specialist hospital beds is insufficient. We will be able to determine if we need manpower, lab instruments, OT instruments, reagents, medical equipment, and pharmaceuticals if we analyze our personnel, lab instruments, OT instruments, reagents, medical equipment, and drugs. It will be much easier to address difficulties and enhance technology if we can examine our technical challenges. Using HTA, we may complete tasks in a systematic manner. It would be better if we could use our resources as efficiently as possible. HTA will be attainable if we are aware of our gaps and the specific areas where our requests in various categories are necessary. Artificial intelligence (AI) should be used. HTA is essential for 100% accurate illness detection, and with this evaluation, we can define our healthcare system's precise demands. Our patients will profit more from this method. They noted that while HTA is now present in some areas, it would be more useful if we established a general framework for HTA in all sectors. HTA is required for the latest system implementations. Service delivery will improve if we employ HTA correctly at the community, district, and regional levels.

Process of Health Technology Assessment

When asking for feedback on the HTA process, they underline the need to include epidemiologists, researchers, physicians, politicians, and the public. For the HTA process, we must first design software and then enter the actual health service requirements. A technical team should be formed to analyze what and how much we have and whether it is adequate. It is also critical to check in on a semi-annual or annual basis to see if these items are being used appropriately. We should compare our current technology to that of other nations, like Bhutan or India because many individuals in our country receive treatment from India.

They also stated that via study, we would be able to learn about the importance of technology. For this, we will need to upgrade or allocate research tools. At the end of the study, suggestions should be made so that our stakeholders understand what is required and where it is required. The assessment will be guided by the needs of the health sector. It should be provided where it is most needed. Local demand

must be met while state policies must be handled. We must do a need analysis by considering all of society's expectations, and we must intervene with technology that is not overly sophisticated. It would be something that individuals in our country could easily undertake and that we could sustain, based on necessity.

HTA Influence on the health service delivery system

All the responders are well-versed in Bangladesh's healthcare delivery system. They stated that our healthcare delivery system is based on the people. Our healthcare delivery system operates in phases. At the primary level, there is a community clinic, a union sub-center, and a satellite clinic, as well as an Upazila Health Complex at the sub-district level. The Civil Surgeon's office and Sadar Hospital are located at the secondary level. Medical colleges and specialist hospitals at the tertiary level. The healthcare system in Bangladesh is woefully insufficient. Everyone in our healthcare system who has a responsibility is not carrying out their responsibilities efficiently. We may incorporate new technology when it is offered to the market. As a result, we must guarantee that we can train and retain our workforce.

All respondents agree that HTA can have a good impact on our healthcare system. Rural locations have more medicine and device shortages than metropolitan areas. We can access the demand and satisfy their requirement through this evaluation. We learn about the illness pattern, people's requirements, age structure, environment, and financial capability by conducting an evaluation. Then we will be able to prepare specialist labor as needed. We should also evaluate the sensible use of current drugs, devices, and labor. To enhance the delivery system, the device/equipment repair system should be easily accessible. Which hospital needs which pharmaceuticals are a critical evaluation, and effective medication allocation will be achievable as a result. We will be able to allocate the correct medicine in the proper spot through drug evaluation since some drugs are more essential in certain places. This assessment will be crucial in influencing the healthcare delivery system. If the same procedure is used to designate the suitable location, the appropriate device and staff will be obtained. We must consider proposals from lawmakers, the public, and stakeholders; otherwise, this evaluation will fail. Previously, there existed an Essential Service Package that determined which treatments were required in which situations. Around 90% of people can afford this therapy on a shoestring budget. Personnel should obtain enough training in the case of equipment and technology. They require training in both device input and output. HTA will motivate our healthcare system's personnel to offer the greatest possible treatment to the public. We may overcome our limitations if we are truthful in our own environment.

According to the respondents, clinical effectiveness and patient benefit would surely improve with HTA. Quality will be improved in the areas of patient safety, medication safety, and antibiotic resistance. Positive and bad developments will be made public. The location of the sickness, the district, and the region where the medicine is most used will all be known. If properly implemented, HTA will be extremely advantageous to the nation's healthcare system. The referral system might then be turned on. Because of public demand, if we can build HTA, there will be equal distribution of pharmaceuticals, devices, and personnel. Out-of-pocket expenses should be reduced.

HTA Influence on quality health service delivery system

Almost every responder expressed an opinion on the impact of HTA on the quality of Bangladesh's

healthcare system. Through the evaluation, we can compare our delivery system to see whether we are improving. High-level government officials must review the input from these implementations and examine it before applying it to the service. HTA will be critical in maintaining the quality of healthcare delivery. Leadership is one of the pillars of the healthcare system. Where there is leadership in the health system, there will be openness. If we assure openness and justice, we can assign the right people to the right places, which is critical for improving healthcare quality. If there is no evaluation, the delivery system would be hampered owing to a lack of responsibility and a lack of attitude to provide service to the people. According to the respondents, excellent health care will not be developed unless the technology is evaluated. HTA is necessary for an improved healthcare delivery system. We will be able to develop cost-effective management using HTA, and patients will profit more from it. HTA will help us supply technical services. It will help to balance supply and demand.

They stressed a good supply of drugs depending on patient requirements in terms of clinical effectiveness and patient benefit. At the same time, patient satisfaction must be ensured at the lowest feasible cost. With a comprehensive examination, HTA may be able to correct flaws in our healthcare delivery system. In terms of openness and fairness, respondents agree that preserving transparency and fairness is critical for our healthcare system. HTA shall uphold its commitments to accountability, fairness, and openness. HTA will surely have an influence on the quality of our healthcare delivery if it is implemented efficiently and methodically.

HTA affects health expenditure

Respondents feel that HTA will keep technology up to date. HTA can help us put new processes, tools, and procedures in place. We don't have enough money for the health system, but with HTA, we can obtain better results with less money. Planning and budgeting are critical components of every project. Where there is a larger need, the funding should be distributed. Planning and funding will be based on disease prevalence, as well as the population, area, and district where the disease is most prevalent. In each of these sectors, HTA is a critical approach. Everything will be adequately managed by HTA, which will surely contribute to making transparent, equitable, and need-based judgments. HTA, according to respondents, will keep technology updated. HTA can assist us in implementing new processes, tools, and procedures. We don't have enough money for the healthcare system, but HTA allows us to get better results with less money. Every project requires careful planning and finance. Funding should be provided where there is a greater demand. illness prevalence, as well as the population, area, and district where the illness is most common, will be used to guide planning and financing. HTA is a vital strategy in each of these domains. HTA will handle everything effectively, which will undoubtedly aid in making transparent, equitable, and need-based decisions. To begin, we must organize our job for budgeting our total health system through technology evaluation. HTA will minimize our healthcare costs via careful planning and budgeting. We call it better health service delivery when technology is cost-effective.

HTA contribute to clinical guideline and clinical practice

Respondents believe that integrating physicians in HTA will help to improve clinical guidelines and clinical practice. The proper use of clinical guidelines is critical. It should be fully applicable at all levels of the healthcare system. After a thorough evaluation, clinical recommendations should be updated as soon as possible. Through evaluation, rational use of medication, cost-effective management, the establishment of clinical guidelines, and the right use of the recommendations in clinical practices will be achievable. We

cannot treat our patients properly if we lack technological expertise. For appropriate therapy, adequate clinical guidelines are required. We will be able to reject needless items and obtain those that are important thanks to evaluation.

They stated that clinical guidelines are necessary for the treatment of a disease. The assessment of disease burden, mortality, and morbidity will aid in the development of clinical recommendations. Every stage of the procedure should have clinical guidelines, from inquiry to diagnosis to therapy. According to clinical criteria, every patient might get the proper care. In clinical settings, it might facilitate illness identification and treatment. It is also quite useful in dealing with pandemic and epidemic circumstances. Using HTA, we may develop appropriate clinical recommendations to avoid issues in crucial circumstances. Every patient should be given the best possible treatment. Clinical guidelines for each disease should be revised on a frequent basis.

Challenges in adopting HTA

The participants believe that the HTA is a significant task in and of itself. Overcrowding, an excess of patients, a lack of equipment, a bad infrastructure, insufficient staff, corruption, budgetary limits, and ineffective guidelines will all be addressed in the technical evaluation. One of the obstacles in HTA is the implementation of a newer system. There are resource constraints. Although the equipment is for sale, there are insufficiently skilled employees to run it efficiently. If this is the case, there may be a problem with how the newer technique is implemented.

Respondents feel that our healthcare delivery system is modern and up-to-date. We just need strong advocacy and should send a message to our leaders about correct evaluation, as well as disseminate the word that HTA is not a novel concept, but rather a must. Great leadership will be able to accurately depict actual conditions; hence we need great leadership in all sectors. A central database system should be set up to store data for simple evaluation. Our human resources should be expanded and properly educated. In terms of resource restrictions, we have an adequate number of resources. If accountability is created and individuals can obtain what they require, resources will be dispersed appropriately.

DISCUSSION

Most of the respondents have a good knowledge and understanding of health technology, HTA, healthcare service delivery, the impact of HTA on healthcare service delivery, health expenditure, clinical guidelines, and clinical practices. They also expressed their opinions regarding the challenges in adopting HTA in Bangladesh and provided some recommendations to overcome those. Health technology, according to the respondents, is an innovation or intervention that allows us to improve healthcare delivery by updating equipment, diagnosis, treatment, manpower, device, investigation, procedure, human resources, health education, health research, health information system, ethical issues, medicine, and vaccine. They define HTA as the systematic examination of the qualities, effects, and/or impacts of health technology. It is a multidisciplinary approach that evaluates a health intervention or health technology's social, economic, organizational, and ethical challenges. Health technology assessment (HTA) is a useful approach for assisting in priority setting and generating evidence for decision-making, particularly in the pursuit of universal health coverage (UHC). The Government of Bangladesh also committed to gradually achieving universal health coverage by 2032, as evidenced by the Health Care

Financing Strategy of 2012.2

Respondents feel that HTA can have a good impact on our three-tiered healthcare delivery system. This evaluation will be crucial in influencing the healthcare delivery system. We learn about medicine and device shortages, illness patterns, people's requirements, age structure, environment, and financial capability by doing an HTA evaluation. We should also evaluate the sensible use of current drugs, devices, and labor. To enhance the delivery system, the device/equipment repair system should be easily accessible. We will be able to allocate the correct medicine to the proper location since some drugs are more needed in certain places. HTA will motivate our healthcare system's personnel to offer the greatest possible treatment to the public. We may overcome our limitations if we are truthful in our own environment. Quality will be improved in the areas of patient safety, medication safety, and antibiotic resistance. It is increasingly acknowledged as a useful policy tool in low- and middle-income countries (LMICs), where evidence is needed to drive UHC policies such as quality improvement (QI) programs and quality standards (QS). It is also an essential component of a well-functioning and performing health system, along with clinical validity, clinical usefulness, efficacy, and cost-effectiveness.5

HTA will be critical in maintaining the quality of healthcare delivery. Through the evaluation, we can compare our delivery system to see if we are improving or not. High-level government officials must review the input from these implementations and examine it before applying it to the service. Quality health care will not be developed unless the technology is evaluated. HTA is necessary for an improved healthcare delivery system. We will be able to develop cost-effective management using HTA, and patients will profit more from it. HTA will help us supply technical services. It will help to balance supply and demand. HTA shall uphold its commitments to accountability, fairness, and openness. HTA will surely have an influence on the quality of our healthcare delivery if it is implemented efficiently and methodically. HTA may be used as a cost-effective decision-making tool in planning and budgeting. There can be no sustainable and successful policy, planning, or budget without assessment. If this evaluation method is implemented, there may be some budget increases, policy and planning adjustments, and technological advancements. We will be able to determine the need for primary, secondary, and tertiary-level health services through evaluation. The funding will be allotted based on the need for pharmaceuticals, devices, and manpower. HTA aspects in decision-making are becoming increasingly important in the Southeast Asian region. However, due to tighter financial limits as many nations migrate away from reliance on development aid and toward UHC, there is a need for HTA to offer "value for money" to patients.HTA is concerned with two primary issues: clinical efficacy and cost-effectiveness of new technology in relation to old technology.3

Through evaluation, rational use of medication, cost-effective management, the establishment of clinical guidelines, and the right use of the recommendations in clinical practices will be achievable. For appropriate therapy, adequate clinical guidelines are required. We will be able to reject needless items and obtain those that are important thanks to evaluation. Every stage of the procedure, from inquiry to diagnosis to therapy, should have a clinical guideline. According to clinical criteria, every patient might get the proper care. The adoption of HTA in healthcare service delivery is a significant barrier. Overcrowding, an excess of patients, a lack of equipment, a bad infrastructure, insufficient staff, corruption, budgetary limits, and ineffective guidelines will all be addressed in the technical evaluation. Great leadership will be able to accurately depict actual conditions, hence we need great leadership in all sectors.

The findings show that the combination of scientific and moral justifications for HTA provides a potent

modernizing vision for many poor and middle-income nations' health systems. A 2014 World Health Assembly resolution, for example, emphasizes increased efficiency and the need for evidence-based policymaking as grounds for adopting HTA. Despite the lack of actual data, this made HTA difficult to deny. Other policies, such as international reference pricing, risk-sharing agreements, or implicit rationing, may be easier to implement and perform better in terms of cost containment, but none provide the same complicated promise as HTA. As a result, HTA is currently a policy with no direct alternatives, making it potentially appealing to policymakers throughout the world.22

CONCLUSION

Health technology is an innovation or intervention that allows us to improve healthcare delivery by updating medical devices, medicine, vaccine, investigation, procedure, human resources, and health information systems. Although Bangladesh has resource constraints including manpower, technology, and budget, as well as a lack of effective management and leadership, Bangladesh will be able to develop cost-effective management using HTA, and patients will profit more from it. It will help to balance supply and demand. HTA may be used as a cost-effective decision-making tool in planning and budgeting. HTA will surely have an influence on the quality of our healthcare delivery if it is implemented efficiently and methodically.

RECOMMENDATIONS

Bangladesh just needs strong advocacy among policymakers and other stakeholders about HTA. Human resources should be increased and well-trained. Strong leadership will be able to represent actual situations properly, so we need strong leadership in every sector. A central database system should be established to store data for easy assessment. Stakeholders should be involved in strategic planning for HTA. In terms of the newer system implementation, the public and the media should be informed of all positive actions. A major challenge will be our health professionals. Their response should be sought regarding health technology assessment. They should be motivated as a newer system is being implemented. Implementing the new system won't be challenging till then. Finally, Bangladesh needs an independent HTA unit to implement policy decisions to strengthen the use of health technology in all sectors of health services for providing quality health services to all types of populations.

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