



Patient satisfaction with healthcare services: A Bangladesh scenario

Abdul Kader Mohiuddin

Dr. M. Nasirullah Memorial Trust, Tejgaon, Dhaka, Bangladesh

DOI: <https://doi.org/10.33545/26647184.2019.v1.i1a.1>

Abstract

Patient satisfaction is a useful measure to provide an indicator of quality in healthcare services. Concern over the quality of healthcare services in Bangladesh has led to loss of faith in healthcare providers, low utilization of public health facilities, and increasing outflow of Bangladeshi patients to hospitals in abroad. The main barriers to accessing health services are inadequate services and poor quality of existing facilities, shortage of medicine supplies, busyness of doctors due to high patient load, long travel distance to facilities, and long waiting times once facilities were reached, very short consultation time, lack of empathy of the health professionals, their generally callous and casual attitude, aggressive pursuit of monetary gains, poor levels of competence and, occasionally, disregard for the suffering that patients endure without being able to voice their concerns—all of these service failures are reported frequently in the print media. Such failures can play a powerful role in shaping patients' negative attitudes and dissatisfaction with healthcare service providers and healthcare itself.

Keywords: consultation length, patient waiting time, rural health facilities, unethical drug promotion, quality of future doctors, out-of-the-pocket expenditure

Introduction

Bangladesh, a lower-middle economy in South Asia, has been experiencing a demographic and epidemiological transition with rapid urbanization and a gradual increase in life expectancy^[7]. It is the seventh most populous country in the world and population of the country is expected to be nearly double by 2050^[8]. The increasing burden of noncommunicable diseases (NCDs) in Bangladesh can be attributable to rapid urbanization and nearly 50% of all slum dwellers of the country live in Dhaka division [9, 10]. According to World Bank's Country Environmental Analysis (CEA) 2018 report, air pollution lead to deaths of 46,000 people in yearly in Bangladesh^[11]. High level of pesticides content is present in grains, pulses, in fruits and vegetables; adulteration reported by Institute of Public Health (IPH) in nearly 50% of market samples^[12] and fecal bacteria found in 97% bottled mineral water^[13]. Although there is a declining trend of child malnutrition but the prevalence of child malnutrition is still high^[14]. About 2/3rd of the total health expenditure is from out-of-pocket (OOP), and of this, 65% is spent at the private drug retail shops^[15]. There is little assessment of the quality of provider care, low levels of professional knowledge and poor application of skills. Bangladesh does not have a formal body for arbitration of complaints against health providers. Hospital or clinic authorities

address complaints and disputes independently, without involving the government or legal entities^[16]. 'Negligence of Physicians' and 'Wrong Treatment' have become commonly-used phrases in print and electronic media of Bangladesh, while violence against the physician in Bangladesh (by patients or by their associates) has been increased and the severity has been intensified simultaneously^[17].

Methodology

Research conducted a year-round comprehensive literature search, which included technical newsletters, newspapers journals, and many other sources. The present study was started at the beginning of 2019. PubMed, ALTAVISTA, Embase, Scopus, Web of Science, and the Cochrane Central Register were thoroughly searched. The keywords were used to search for different publishers' journals such as Elsevier, Springer, Willey Online Library, and Wolters Kluwer which were extensively followed. Medicine and technical experts, pharmaceutical company representatives, hospital nurses, and journalists were given their valuable suggestions. Projections were based on patient experience, expectations and reasons of dissatisfactions among Bangladeshi population with the present healthcare facilities.



Fig 1: Patients' Struggle in a Public Medical College Indoor ^[1-6]. Unsurprisingly, death due to "wrong treatment" or medical negligence and doctors' incompetence have been reported in the media all the year-round. Laws such as the Penal Code 1860, Code of Criminal Procedure 1898, Consumer Rights Protection Act, 2009 under which cases can be filed for legal remedies. In the event of death due to medical negligence, cases may be filed under the penal code, 1860, as death by negligence is a criminal offence and is punishable under section 304A of the penal code. There are also provisions for imprisonment and fine which are equally applicable to both the doctors and the complainants. In the realm of therapeutic care, challenges are: public hospitals face no competition, have neither built-in incentive system nor any culture to enforce discipline and conduct rules and punish the recalcitrant; there is no mechanism either to evaluate individual's performance or that of any healthcare institution. Doctors usually give little time, often less than one minute, to examine patients and mistreat them; fixated mind-set of hospital staff who overestimate their own performance, care little about the patients' experiences and don't know that patients' satisfaction index is related to clinical outcome.

Present Healthcare Situation

Harvard Professor Sue Goldie credited Bangladesh for reducing under-5 child mortality by 80%, the highest in South Asia and being on target to reach 2015-MDG5 goal of reducing maternal mortality ratio of 1990 by three-quarters ^[18]. The current doctor-patient ratio in Bangladesh is only 5.26 to 10,000, that places the country at second position from the bottom, among the South Asian countries, according to the WHO ^[19]. According to Bangladesh Medical and Dental Council, between 2006 and 2018, there were 25,739 registered male doctors (47%) and 28,425 female doctors (53%) in the country ^[20]. Average consultation length is used as an outcome indicator in the primary care monitoring tool which was found a less than a minute to an outdoor patient ^[5]. An average 1.5 hours is to spend to see a doctor in Dhaka Medical College and other public hospital outdoors, sometimes there are no doctors due to post vacancy ^[21-23]. Patients' struggle for essential services during any disease outbreak in hospital indoor and outdoor is common (Figure 1). Overall, 67% of the healthcare cost is being paid by people, whereas global standard is below 32%. Only one hospital bed is allocated per 1667 people, and 34% of total posts in health sector are vacant due to scarcity of funds ^[24]. In a low socio-economic country like Bangladesh, nurses struggle in a grossly underfunded healthcare system to deliver care to the people. Heavy workloads; lack of government accommodation and transportation; poor health status; lack of support from nursing supervisors; lack of promotion opportunities; incomplete hospital

policies and procedures; and lack of night shift and risk allowances reported by Akter et al, 2019 ^[25]. Bangladesh Health Facility Survey (BFHS), 2017 reveals that more than 70% of rural health facilities do not have all six basic equipment items (thermometers, stethoscopes, blood pressure gauge, weighing scales for infants and adults, and torchlights) ^[26]. Only around half of physicians employed in public hospitals at district to union sub-center level are satisfied with availability of medicines in their facilities, suggesting widespread lack of medicines stocks in public facilities ^[27]. In 2013/2014, the Infant Mortality Rate, which in urban areas overall is 34 per 1000 live births and 40 in rural areas, rises to almost 70 in urban slum areas ^[28]. Sir William Osler said "One of the first duties of the physician is to educate the masses not to take medicine". Bangladesh has an estimated 100,000 licensed retail drug shops and a further 100,000 unlicensed drug shops ^[29, 30]. They are largely unregulated and unaccountable, and run by salespersons who are mostly trained informally through a process of 'apprenticeship' ^[29], where majority of medicines were dispensed irrationally without any prescription and OTC dispensing of many low safety profile drugs is common ^[31]. More than 80% of the population seeks care from untrained or poorly trained village doctors and drug shop retailers ^[30]. The post disaster management in Bangladesh is inadequate due to lack of proper compensation, inadequate or inaccessible healthcare facilities, and the slow rehabilitation process to accommodate the survivors of disasters within the mainstream society ^[32]. The recent Dengue outbreak

caused more than 50,000 hospitalizations in August, 2019 alone^[33] and around 100,000 hospitalizations and claimed 112 deaths from January to October, 2019^[34], where hospitals were not able to handle the huge number of patients flooding the hospitals^[35]. The country is hosting 1.1 million Rohingya refugees [36], who are posing serious threat of diphtheria^[37-39], HIV and other STDs transmission^[40, 41].

System Collision with Traditional Medicine

There are around 86,000 villages in the country and almost every village has one or two traditional practitioners^[42]. Over 65% of the population of Bangladesh obtain first-line healthcare services primarily from village doctors^[43]. An estimated 70% to 75% people of the country use traditional medicine for their healthcare^[44, 45]. Also, 70% of the women used at least one herbal product during their last pregnancy, mostly without consultation of a qualified healthcare practitioner^[30]. Again, alternative/traditional medicine are not included in the medical school curriculum except in Ayurvedic Medical College of Bangladesh. Illiteracy, poor economic status, cultural context, unpredictable diagnosis and treatment cost, absenteeism of doctors in rural health complexes, divergent medical opinions, unhealthy competition between health providers and their tendency to linger treatment procedure, negative perception of costly medical tests and unnecessary food supplements as well as easy availability and accessibility of alternative medicine diverted the patients to seek help from orthodox to alternative medicine^[46-52].

Drug Cost Vs OOP Expenditures

Due to high competition in the pharmaceutical industry, aggressive marketing strategies have been adopted by the different medicine companies. The doctors, willingly or unwillingly, become part of the system with few exceptions. This unethical promotion clearly drives them towards prescribing high valued or unnecessary medicines^[53-59]. Very often, medical representatives rush at peak hours and aggressively pulls patient prescriptions in the name of survey. Prescribing antibiotics in 44% consultations, prescribing of 3 or more drugs in 46% in urban centers and 33% in local health centers^[29] clearly raise OOP expenditure and create strong repulsion towards modern medicine where nearly 22% of the population is below poverty line^[60, 61]. Moreover, doctors are more often accused to take 30% to 50% commission on a test from hospitals/diagnostic centers^[51],^[62, 63]. Neither the regulatory authority nor the professional or consumer rights bodies has any role to control or rectify the process^[53]. Annually around 3.5% households (corresponding to approximately 5 million people) are pushed into poverty due to OOP outlays wherein chronic non-communicable diseases are the principle contributor^[64, 65]. Khan et.al, 2017 further revealed that households spend 11% of their total budget on healthcare wherein 9% households faced financial catastrophe, wherein 16.5% of poorest and 9.2% of the richest households faces catastrophic health expenditure^[65]. Studies reported that detrimental coping strategies and lack of healthcare expenditure protection for health care often negatively affect future income and can magnify people's vulnerability and hardship^[66].

Downgrading Image of Supplied Medicines

Fake drugs kill more than 250,000 children a year worldwide^[67]. Ensuring quality health service is impossible without availability

of medicines as it is one of the basic requirements of people, said former DGDA of Bangladesh^[68]. Counterfeit medicines may lead to avoidable morbidity, mortality, drug resistance, early death or treatment failure, as well as loss of faith in health systems, especially in low-income and middle-income countries^[69]. Rural people, who are believed to be unaware of the situation are generally the victims of the adulterated medicines. "People are taking poison without knowing it," according to the Dean, faculty of Pharmacy at the University of Dhaka, who noted sales of counterfeit or sub-standard medication are most common in rural areas due to the lower levels of health awareness and formal education there^[70]. According to a survey by Bangabandhu Sheikh Mujib Medical University, as many as 2,700 children died due to renal failure after taking toxic syrup from 1982 to 1992. The accused companies took a more reasonable approach. Recognizing that 90% of their products had no scientific validity, they argued that the fault lay with the Drug Administration which should not have permitted their products in the first place^[71]. Recently, a lot of people are being cheated in buying adulterated insulin^[72]. According to the drug market intelligence, an estimated Tk 600 crore of counterfeit medicines is traded in the Tk 18,000 crore medicine market in Bangladesh each year^[73-75]. The government revoked licenses of 20 pharmaceutical companies for producing adulterated and low-quality medicine back in 2016^[76]. Besides those, the parliamentary panel recommended that licenses of 14 companies to manufacture antibiotics (penicillin, non-penicillin and cephalosporin groups) be revoked and permission of 22 companies to produce medicine of penicillin and cephalosporin groups be suspended^[54],^[77-82]. The court also ordered the government to immediately stop these companies from producing medicines. But the government is yet to act on it. 370 cases of fake medicines had been filed in the first 6 months of 2019, according to the DGDA^[83]. Even hospitals like Apollo and United, were accused for keeping and selling of substandard reagents and drugs^[54]. It should be further noted that, there are two Govt. Drug Testing Laboratories in the country, one unit in Chittagong and another in Dhaka^[84,85]. They are fully-equipped with modern machines and other testing facilities but their performance is much lower than (5% of the total produce) present demand where there are more than 275 pharmaceuticals companies have more than 25,000 brands that produce more than 100,000 batches of medicines^[86].

Quality of Medical education

In a parliamentary session June 2019, the Health Minister informed that close to 50% teaching positions are vacant in public medical and dental colleges, where most of the vacant posts are of the basic subjects^[87,88]. The disappointing poor performance of the private medical colleges noted from the honorable prime minister in a seminar on critical disease treatment in Bangladesh^[89]. A deficit in 65% teaching staffs in both public and private medical colleges has also been reported^[90]. Generally, 80% of medical education should be provided to students through practical classes—the rest is theoretical knowledge. But in some private medical colleges, students do not get to see patients even in their fourth year^[91]. Doctors without adequate practical and field-based applied knowledge are increasingly become risk factors to the patients they happen to treat. If a degree-holding doctor fails to find the vein for just a saline push-in and then takes the professional help of an experienced nurse it is a shame not

only for the doctor in question but also for the whole nation. Definitely all these facts have deep connections to progression of medical studies and quality of future doctors in Bangladesh.

Debasement of Health Providers' Image

Bangladesh suffers from a severe lack of quality, reliable health care services and an insufficient supply of healthcare organizations to match growing demand. Specifically, there is a major supply gap between the care available to the poor and the rich, especially in light of the growing middle class. A major finding from the household survey was that patients are unhappy with the way health workers in government facilities behave towards them. The behavior of health workers towards them is one of the main determinants of satisfaction of government health service users ^[92]. Though private hospitals and clinics have mushroomed in the country over the years the quality of services delivered by most of those is found to be poor. Surprisingly, more than 40% of private hospitals, clinics, blood banks and diagnostic centers are not registered with the relevant government agency ^[93]. Patients and their families are found to be more appreciative of the services offered by doctors, nurses and other medical staff of foreign hospitals. They find doctors there in particular communicative and caring ^[94]. The number of hospitals of international or regional standard is quite a few and those are located only in Dhaka. Other cities and towns do not have modern health facilities in their true sense. Taking hostage of dead bodies for not clearing the hospitalization costs by some of the hospitals is becoming quite common ^[95-99]. Other allegations also include such as: swapping of a deceased child with a new born baby, abducting or stealing newborn baby, staff not attending to patients in coma, high ICU billing, keeping clinically dead patients in ICU and raising hospital bill, wrong diagnosis and treatment, absence of human touch and care from the hospital staff, not maintaining proper medical history or lack of electronic health record (EHR) or illegible prescription writing etc. Hospital acquired infection rates in Bangladesh may exceed 30% in some hospitals. Also, rural practitioners routinely made errors in death certification practices (more than 95%) and medical record quality was poor (more than 70%). The country has still not introduced the subject of Emergency and Critical care medicine in the curriculum I for graduate medical students. The Basic and Advanced life support courses are still not introduced as integral part of physician credentials in our hospitals, especially for those who work in Medicine, Pediatrics, Anesthesia, Emergency etc. Emergency health care exists in name not in real sense.

Present Trend of Medical Tourism

In a press briefing, former health minister of Bangladesh revealed four reasons of Bangladeshi patients seeking medical treatment in abroad (economic solvency, love for treatment abroad, health tourism, and in some cases, for the lack of suitable treatment facilities in the country) but he could not present any statistics about how many people go abroad from Bangladesh for treatment and the expenditure involved. However, public health experts, health economists, agents of foreign specialized hospitals and patients reported that Bangladeshis seeking treatment abroad is on an upward trend since patients are unwilling to gamble with their life and health. "People do everything they can to get an accurate diagnosis. They run from one doctor to another, change hospitals and so on. Eventually they get frustrated when they

don't see results. That's why people decide to go abroad for treatment," according to director of the Institute of Health Economics at Dhaka University. A low confidence on local doctors and flawed diagnosis are forcing a large number of Bangladeshis to travel abroad for treatment of medical conditions such as cancer, cardiac ailment, autism, infertility, as well as medical check-ups. In fiscal year 2015-16, 165,000 patients from Bangladesh visited different hospitals of India but only around 58,000 medical visas were issued to Bangladeshi nationals. Some 63,000-65,000 patients went to Thailand in 2015. On an average 1,000 Bangladeshis go to India daily and some 10,000 in Malaysia (in a year) to take treatment, as reported by 2 directors of Indian and Malaysian consultancy firms. India, Thailand, Singapore and Malaysia are the most visited countries by Bangladeshi medical tourists. Instead of playing the blame game, doctors should act responsibly and government should acknowledge its huge responsibility for updating the healthcare sector, according to Joint Secretary General, Diabetic Association of Bangladesh (BADAS) and convener of National Health Rights Movement. For Bangladesh's economy, increasing medical tourism means the country economy is losing the amount of money Bangladeshis are spending abroad. About 700,000 people go to abroad every year for treatment spending US\$ 3.5-4.0 billion during the period 2018-2019 which was \$2.0 billion in 2012, due to lack of confidence on the local physicians and poor diagnosis system. The middle and lower middleclass families, in many cases, are forced to sell their property or spend life's savings or borrow from others to meet medical expenses abroad. This also drainage hard-earned foreign currency at the same time Bangladesh is becoming health tourism market for neighboring countries. To cash in on the growing demand from Bangladesh's rising mid-income people, some hospitals of India, Thailand, Singapore and Malaysia have either opened their liaison offices or hooked clients through their consultants in Bangladesh.

Conclusion

Privatization not only makes services more expensive, but also diminishes equity and accountability in the provision of services. The public sector should remain vital, and the government must remobilize it to provide better provision of healthcare. However, problems such as a lack of personnel, absenteeism, and corruption in the public sector have also contributed to private sector growth. At the same time, affordable formal primary care services are scarce, and what exists is almost exclusively provided by NGOs working on a project basis. NGOs, private organizations and mobile phone companies are also providing e-Health services to the patients in different areas in Bangladesh. It is important to have modern hospitals in divisional and district headquarters. But, unwillingness of skilled and senior health professionals to work outside Dhaka turns out to be a major problem here. As if to follow their footsteps even junior doctors despise postings beyond the capital city. A study on career choices among medical students in Bangladesh revealed that more than 50% respondents wanted to practice abroad about 90% chose major cities as practice locations. According to another study, female medical students face challenges from the society as well as the family. After marriage, their husbands and in-laws expect them to prioritize their families over their career ^[20]. These clearly reveal motivation level of qualified doctors having posting in remote areas. It is high time the authorities act

pragmatically on policies to create female-friendly workplaces everywhere. Doctors and nurses are usually demotivated by poor working conditions, unfair treatment, and lack of career progression; private and unqualified practitioners sought to please patients instead of giving medically appropriate care. However, attractive facilities might lure senior health professionals to cities and towns other than Dhaka. A robust surveillance is necessary for assessing the public health situation in Bangladesh and prompt notification of public health emergency. The relevant policymakers do need to look into the issue seriously, if they are really interested to stop outflow of funds on account of medical treatment abroad and ensure proper health treatment in homeland.

Recommendation

Training of doctors/ nurses and paramedics is a sine quo non for improving both preventive and therapeutic care. So, arrangements should be made to train round-the-year two categories of health staff- doctors and nurses belonging to first category to receive training in healthcare management/administration and the second category comprising of village quacks and SSC/HSC passed young men/women to receive training in preventive and primary therapeutic care in their respective Thana Health Complex and be designated as village health worker (VHW) to work in their own village. Some of the women will receive training in midwifery and be designated as birth attendant. The training of doctors/nurses will focus, inter alia, on patient-safety and patient-centered-care, in which healthcare is conceived of as a partnership between patients and health professionals. Doctors will be motivated to obtain feedback from patients about their experience. Hospital administration should lay down protocols for all procedures and surgeries, and standardize treatments. Nurses will be trained to affix in every ward check-lists like hand-washing/ alcohol rubs, use sanitized gowns and gloves and stress on cleanliness. VHWs and Birth Attendants educate patients and their families, among other things, on how to maintain good health, nutrition level and maintain families' health record. Nurses can be relieved of extra duties by appointing ward clerks. Building on further institutional capacity would be the next step in the way to improving healthcare. National Health Council (NHC), which is to be headed by the Prime Minister, can provide policy directions and evaluate overall progress in healthcare. The government can constitute a National Accreditation Council with the health minister at the helm and make accreditation a mandatory requirement for all hospitals, and other healthcare providers maintain a minimum standard. A patient and family advisory council can be constituted for all hospitals, which will take care of patients' concerns including unnecessary diagnostic tests and procedures and coordinate with management board of hospitals.

Acknowledgment

I'm thankful to Dr. Mamun Rashid, Assistant Professor of Pharmaceutics, Appalachian College of Pharmacy Oakwood, Virginia for his valuable time to audit my paper and for her thoughtful suggestions. I'm also grateful to seminar library of Faculty of Pharmacy, University of Dhaka and BANSDOC Library, Bangladesh for providing me books, journal and newsletters.

Abbreviations

Directorate General of Drug Administration (DGDA); Out-Of-Pocket (OOP); Electronic Health Record (EHR)

Financial Disclosure or Funding: N/A

Conflict of Interest: The author declares that he has no competing interests.

Informed Consent: N/A

Author contributions: N/A

References

1. THE PENAL CODE, 1860 (ACT NO. XLV OF 1860). Date: 6th October, 1860. Available From: <https://www.wipo.int/edocs/lexdocs/laws/en/bd/bd020en.pdf>
2. "The Code Of Criminal Procedure: (Act V Of 1898) As Amended By The Criminal Law Amendment Act, Xii Of 1923 And Criminal Procedure Code Amendment Act, Xviii Of 1923, And As Amended Upto Date With The Criminal Law Amendment Act, 1933." A Textbook of Medical Jurisprudence and Toxicology, 2013, pp. xxxi-xlix., doi:10.1016/b978-1-4831-6824-1.50045-9.
3. The Daily Star. The Consumer Rights Protection Act 2009: Amend it to protect patients' rights. Editorial, March 18, 2015.
4. The Consumer's Right Protection Act, 2009 (Act no. 26 of 2009). Available From: <http://www.consumerbd.org/wp-content/uploads/2017/04/consumer-act-2009.pdf>
5. Irving G, Neves AL, Dambha-Miller H, Oishi A, Tagashira H, Verho A, Holden J. International variations in primary care physician consultation time: a systematic review of 67 countries. *BMJ Open*. 2017; 7(10):e017902. doi: 10.1136/bmjopen-2017-017902
6. Uddin MJ, Ashrafun L and Kubra TJ. Patient Satisfaction with Doctors' Care in Bangladesh: A Case of Government Hospital. *J Fam Med*. 2017; 4(6):1132.
7. GBD 2013 Mortality and Causes of Death Collaborators. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. 2015 Jan 10; 385(9963):117-71. doi: 10.1016/S0140-6736(14)61682-2.
8. "World Population Prospects 2019: Highlights." Statistical Papers - United Nations (Ser. A), Population and Vital Statistics Report, 2019, doi: 10.18356/13bf5476-en. Available From: https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf
9. Al-Shoaibi AAA, Matsuyama A, Khalequzzaman M, Haseen F, Choudhury SR, Hoque BA, Chiang C, Hirakawa Y, Yatsuya H, Aoyama A. Perceptions and behavior related to noncommunicable diseases among slum dwellers in a rapidly urbanizing city, Dhaka, Bangladesh: a qualitative study. *Nagoya J Med Sci*. 2018; 80(4):559-569. doi: 10.18999/nagjms.80.4.559.
10. van der Heijden J, Gray N, Stringer B, Rahman A, Akhter S, Kalon S, Dada M, Biswas A. 'Working to stay healthy', health-seeking behaviour in Bangladesh's urban slums: a qualitative study. *BMC Public Health*. 2019; 19(1):600. doi: 10.1186/s12889-019-6750-0.

11. Majumder AK, Rahman M. Dust pollution in winter. The New nation, November 02, 2018.
12. Mohiuddin, A. K. "The Mysterious Domination of Food/Drinking Water Contaminants and Adulterants in Bangladesh." *Agriculture and Food Sciences Research*, vol. 6, no. 1, 2019, pp. 30–40., doi:10.20448/journal.512.2019.61.30.40 (Published June 04, 2019).
13. Mohiuddin, A. K. "Chemical Contaminants and Pollutants in the Measurable Life of Dhaka City." *European Journal of Sustainable Development Research*, vol. 3, no. 2, Mar. 2019, doi:10.29333/ejosdr/5727.
14. Anik AI, Rahman MM, Rahman MM, Tareque MI, Khan MN, Alam MM. Double burden of malnutrition at household level: A comparative study among Bangladesh, Nepal, Pakistan, and Myanmar. *PLoS One*. 2019 Aug 16;14(8):e0221274. doi: 10.1371/journal.pone.0221274.
15. Ministry of Health and Family Welfare, Government of Bangladesh (MoHFW, GoB). *Bangladesh National Health Accounts 1997–2012*. Dhaka: Health Economics Unit, MoHFW, GoB; 2015.
16. Nuri NN, Sarker M, Ahmed HU, Hossain MD, Beiersmann C, Jahn A. Experience and perceived quality of care of patients and their attendants in a specialized mental hospital in Bangladesh. *Int J Ment Health Syst*. 2019; 13:46. doi: 10.1186/s13033-019-0303-x.
17. Hasan MI, Hassan MZ, Bulbul MMI, Joarder T, Chisti MJ. Iceberg of workplace violence in health sector of Bangladesh. *BMC Res Notes*. 2018; 11(1):702. doi: 10.1186/s13104-018-3795-6.
18. Bhattacharyya SK. Improving the quality of healthcare in Bangladesh. *The Independent (OP-ED)*, 24 June, 2015.
19. Alam A. Patient, doctors, nurses ratio: Bangladesh lags far behind its neighbours. *DhakaTribune*, July 21, 2019.
20. Palma P. Uphill battle of female doctors: They surpass male peers in number, yet struggle against host of barriers. *The daily Star*, May 07, 2019.
21. Begum K, Islam J. REPORT ON IN-DEPTH MONITORING OF THE OPERATIONAL PLAN "Hospital Services Management (May, 2015) (2nd Revised)". Available From: https://imed.portal.gov.bd/sites/default/files/files/imed.portal.gov.bd/page/7b67fc61_3eef_4cb0_b798_00fe28fa13af/ho spia%20srvc%20managemnt.pdf
22. *Bdnews24.com*. Wait 78 minutes to see a DMCH doctor. Bangladesh, October 18, 2006
23. Ali, Mohammad, et al. "Problem Evaluation of Service Recipient and Service Provider at out Patient Departments of a Tertiary Level Hospital." *Journal of Armed Forces Medical College, Bangladesh*, vol. 9, no. 2, Feb. 2015, pp. 26–31., doi:10.3329/jafmc.v9i2.21822.
24. Fahim SM, Bhuayan TA, Hassan MZ, Abid Zafr AH, Begum F, Rahman MM, Alam S. Financing health care in Bangladesh: Policy responses and challenges towards achieving universal health coverage. *Int J Health Plann Manage*. 2019 Jan; 34(1):e11-e20. doi: 10.1002/hpm.2666.
25. Akter N, Akter MK, Turale S. Barriers to quality of work life among Bangladeshi nurses: a qualitative study. *Int Nurs Rev*. 2019 Sep; 66(3):396-403. doi: 10.1111/inr.12540.
26. Molla M. A-M. Govt Hospital: Most lacking even basic equipment: 70pc public healthcare facilities don't have thermometers, stethoscopes, blood pressure gauge, weighing scales, torchlights. *The Daily Star*, June 30, 2019.
27. Kasonde L, Tordrup D, Naheed A, Zeng W, Ahmed S, Babar ZU. Evaluating medicine prices, availability and affordability in Bangladesh using World Health Organisation and Health Action International methodology. *BMC Health Serv Res*. 2019 Jun 13;19(1):383. doi: 10.1186/s12913-019-4221-z.
28. Islam R, Hossain S, Bashar F, Khan SM, Sikder AAS, Yusuf SS, Adams AM. Contracting-out urban primary health care in Bangladesh: a qualitative exploration of implementation processes and experience. *Int J Equity Health*. 2018 Oct 5;17(1):93. doi: 10.1186/s12939-018-0805-1.
29. Rousham EK, Islam MA, Nahar P, Lucas PJ, Naher N, Ahmed SM, Nizame FA, Unicomb L. Pathways of antibiotic use in Bangladesh: qualitative protocol for the PAUSE study. *BMJ Open*. 2019 Jan 25;9(1):e028215. doi: 10.1136/bmjopen-2018-028215.
30. Ahmed SM, Naher N, Hossain T, Rawal LB. Exploring the status of retail private drug shops in Bangladesh and action points for developing an accredited drug shop model: a facility based cross-sectional study. *J Pharm Policy Pract*. 2017 Jul 11; 10:21. doi: 10.1186/s40545-017-0108-8.
31. Saha S, Hossain MT. Evaluation of medicines dispensing pattern of private pharmacies in Rajshahi, Bangladesh. *BMC Health Serv Res*. 2017; 17(1):136. doi: 10.1186/s12913-017-2072-z.
32. Kabir H, Maple M, Islam MS, Usher K. The Current Health and Wellbeing of the Survivors of the Rana Plaza Building Collapse in Bangladesh: A Qualitative Study. *Int J Environ Res Public Health*. 2019; 16(13). pii: E2342. doi: 10.3390/ijerph16132342.
33. Mohiuddin, Abdul Kader. "Dengue Protection and Cure: Bangladesh Perspective." *European Journal of Sustainable Development Research*, vol. 4, no. 1, 2019, doi:10.29333/ejosdr/6260
34. *Tribune Desk*. DGHS: 149 more hospitalized for dengue in 24hrs. *DhakaTribune*, November 08, 2019.
35. Al-Amin M. Hospitals swamped with dengue patients, doctors face a tough time. *DhakaTribune*, July 28, 2019.
36. UNB, New York. Rohingya Crisis: It's becoming a regional threat. *The daily Star*, September 29, 2019.
37. Rahman MR, Islam K. Massive diphtheria outbreak among Rohingya refugees: lessons learnt. *J Travel Med*. 2019 Jan 1; 26(1). doi: 10.1093/jtm/tay122.
38. Matsuyama R, Akhmetzhanov AR, Endo A, Lee H, Yamaguchi T, Tsuzuki S, Nishiura H. Uncertainty and sensitivity analysis of the basic reproduction number of diphtheria: a case study of a Rohingya refugee camp in Bangladesh, November–December 2017. *PeerJ*. 2018 Apr 2; 6:e4583. doi: 10.7717/peerj.4583.
39. Finger F, Funk S, White K, Siddiqui MR, Edmunds WJ, Kucharski AJ. Real-time analysis of the diphtheria outbreak in forcibly displaced Myanmar nationals in Bangladesh. *BMC Med*. 2019; 17(1):58. doi: 10.1186/s12916-019-1288-7.

40. Islam MM, Nuzhath T. Health risks of Rohingya refugee population in Bangladesh: a call for global attention. *J Glob Health*. 2018; 8(2):020309. doi: 10.7189/jogh.08.020309.
41. Hossain MM, Sultana A, Mazumder H, Munzur-E-Murshid. Sexually transmitted infections among Rohingya refugees in Bangladesh. *Lancet HIV*. 2018; 5(7):e342. doi: 10.1016/S2352-3018(18)30140-1.
42. Yoshida Y, Harun-Or-Rashid M, Yoshida Y, Alim MA. Perceptions of Ayurvedic medicine by citizens in Dhaka, Bangladesh. *Nagoya J Med Sci*. 2016; 78(1):99-107.
43. Billah SM, Hoque DE, Rahman M, Christou A, Mugo NS, Begum K, Tahsina T, Rahman QS, Chowdhury EK, Haque TM, Khan R, Siddik A, Bryce J, Black RE, El Arifeen S. Feasibility of engaging "Village Doctors" in the Community-based Integrated Management of Childhood Illness (C-IMCI): experience from rural Bangladesh. *J Glob Health*. 2018; 8(2):020413. Doi: 10.7189/jogh.08.020413.
44. Haque MA, Louis VR, Phalkey R, Sauerborn R. Use of traditional medicines to cope with climate-sensitive diseases in a resource poor setting in Bangladesh. *BMC Public Health*. 2014; 14:202. Doi: 10.1186/1471-2458-14-202.
45. Saha BL, Seam MOR, Islam MM, Das A, Ahamed SK, Karmakar P, Islam MF, Kundu SK. General perception and self-practice of complementary and alternative medicine (CAM) among undergraduate pharmacy students of Bangladesh. *BMC Complement Altern Med*. 2017; 17(1):314. doi: 10.1186/s12906-017-1832-y.
46. Haque MI, Chowdhury ABMA, Shahjahan M, Harun MGD. Traditional healing practices in rural Bangladesh: a qualitative investigation. *BMC Complement Altern Med*. 2018; 18(1):62. doi: 10.1186/s12906-018-2129-5.
47. Das S, Mia MN, Hanifi SM, Hoque S, Bhuiya A. Health literacy in a community with low levels of education: findings from Chakaria, a rural area of Bangladesh. *BMC Public Health*. 2017; 17(1):203. doi: 10.1186/s12889-017-4097-y.
48. Joarder T, Rawal LB, Ahmed SM, Uddin A, Evans TG. Retaining Doctors in Rural Bangladesh: A Policy Analysis. *Int J Health Policy Manag*. 2018; 7(9):847-858. doi: 10.15171/ijhpm.2018.37.
49. Shahriar TS. Doctors prescribe unnecessary food supplements. October 09, 2015.
50. Uddin J. Govt moves to discourage food supplement import. *NEWAGE*, Nov 27, 2016.
51. Palma P, Sujana MA. Rising Medical Expenses: The poor slide deeper into poverty: Flawed healthcare system to blame, say experts. *The Daily Star*, April 07, 2019.
52. Palma P. Silent on rising healthcare cost: Proposal for setting up eight more medical colleges. *The daily Star*, June 14, 2019.
53. Mohiuddin M, Rashid SF, Shuvro MI, Nahar N, Ahmed SM. Qualitative insights into promotion of pharmaceutical products in Bangladesh: how ethical are the practices? *BMC Med Ethics*. 2015; 16(1):80. doi: 10.1186/s12910-015-0075-z.
54. AK Mohiuddin. An A-Z Pharmaceutical Industry: Bangladesh Perspective. *Asian J. Res. Pharm. Sci*. 2019; 9(1):17-28. DOI No: 10.5958/2231-5659.2019.00004.3
55. Shafique S, Bhattacharyya DS, Anwar I, Adams A. Right to health and social justice in Bangladesh: ethical dilemmas and obligations of state and non-state actors to ensure health for urban poor. *BMC Med Ethics*. 2018 Jun 15;19(Suppl 1):46. doi: 10.1186/s12910-018-0285-2.
56. Haque Mainul. *et al*. "Medicine Promotional Literature as a Source of Updated Information in Bangladesh: Do Those Advertising Literature Promote Continued Medical Education or Deceptive Advertising?" *Acta Medica International*, 2017; 4(2):20. doi:10.4103/ami.ami_58_17.
57. Arefin MS. The unethical gift-giving of drug companies. *The Daily Star*, March 06, 2017.
58. Staff Correspondent. Unethical promotion raises healthcare cost: Experts tell discussion about pharma companies. *The Daily Star*, October 25, 2016.
59. Islam, Sharmin, et al. "Bangladesh Pharmaceutical Industry: Perspective and the Prospects." *Bangladesh Journal of Medical Science*. 2018; 17(4):519-525., doi:10.3329/bjms.v17i4.38306.
60. BSS, Dhaka. Poverty rate comes down at 21.8pc in 2018: BBS. *The Daily Star*, May 13, 2019.
61. Tribune desk. Poverty rate comes down to 21.8% in 2018. *DhakaTribune*, May 13, 2019.
62. Akter Taslima, Shahidul Islam. *Dhaka Medical College Hospital: A Diagnostic Study - Executive Summary*, 2006, 1-4. Available From: https://www.ti-bangladesh.org/research/ES_DMCH.pdf
63. Ullah A. Diagnostic centres use low-quality chemicals for tests. *The Daily Sun*, 17 September, 2018.
64. Hamid SA, Ahsan SM, Begum A. Disease-specific impoverishment impact of out-of-pocket payments for health care: evidence from rural Bangladesh. *Appl Health Econ Health Policy*. 2014 Aug; 12(4):421-33. doi: 10.1007/s40258-014-0100-2.
65. Khan JAM, Ahmed S, Evans TG. Catastrophic healthcare expenditure and poverty related to out-of-pocket payments for healthcare in Bangladesh-an estimation of financial risk protection of universal health coverage. *Health Policy Plan*. 2017 Oct 1; 32(8):1102-1110. doi: 10.1093/heapol/czx048.
66. Hossain SJ, Ferdousi MJ, Siddique MAB, Tipu SMMU, Qayyum MA, Laskar MS. Self-reported health problems, health care seeking behaviour and cost coping mechanism of older people: Implication for primary health care delivery in rural Bangladesh. *J Family Med Prim Care*. 2019 Mar; 8(3):1209-1215. doi: 10.4103/jfmpc.jfmpc_162_18.
67. Sample I. Fake drugs kill more than 250,000 children a year, doctors warn. *The Guardian*, March 11, 2019.
68. *Tribune Online Report*. 'War should be declared against drug adulteration'. *DhakaTribune*, October 19, 2014.
69. Rahman, Mohammad Sofiqur, *et al*. "The Health Consequences of Falsified Medicines- A Study of the Published Literature." *Tropical Medicine & International Health*. 2018; 23(12):1294-1303. doi:10.1111/tmi.13161.
70. Wadud M. Bangladesh's battle with fake and low-standard medicine. *The New Humanitarian*, 04 November 2013.
71. Yusuf A, Salam U. The deadly world of fake medicine. *The daily star*, March 08, 2015.
72. Hasan K. Detectives bust counterfeit medicine making gang in Dhaka. *Dhaka Tribune*, February 03, 2019.
73. *The New Nation*. Stop importing fake medicines for the sake of public health. Editorial, November 02, 2019.

74. The Daily Star. New method for combating counterfeit drugs: A laudable initiative. Editorial, June 23, 2016.
75. Ahmed R. Know your medicine Send text to verify if the medicine is counterfeit or not. The Daily Star, June 27, 2016.
76. Senior Correspondent. 20 pharmacos going out of business for making adulterated, low-quality drugs. bdnews24.com, April 21, 2016.
77. Staff Correspondent. Revoke licences of 20 drug firms: Recommends expert committee citing the companies' failure to ensure quality, submits report to JS body. The Daily Star, April 21, 2016.
78. Staff Correspondent. Substandard Drugs Govt revokes licences of 11 companies: Production at 9 others halted. The Daily Star, June 15, 2016.
79. Sun Online Desk. Writ seeks revocation of 20 drug companies' licences. Daily Sun, June 06, 2016.
80. Sun Online Desk. '20 pharmaceutical companies' lincenses to be revoked promptly'. Daily Sun, June 12, 2016.
81. Staff Reporter HC. Cancels licences of 20 drug cos. The Independent, February 14, 2017.
82. Shaon AI. Verdict for substandard drug production case deferred, 10, 2017.
83. Rabbi AR. 22 pharmacy owners fined for selling expired, fake medicine. DhakaTribune, 20, 2019.
84. Senior Correspondent. New pharmaceutical company One Pharma Ltd launched in Bangladesh. Bdnews24.com, October 25, 2015.
85. Bumpas J, Kostermans K, Nair D. Public and private sector approaches to improving pharmaceutical quality in Bangladesh. Available From: <http://documents.worldbank.org/curated/en/892611467998809882/pdf/683570WPOP10250IC00Discussion0paper.pdf>
86. Asia Pacific Observatory on Public Health Systems and Policies. Bangladesh Health System Review. Health Systems in Transition. 2015, 5(3). Available From: http://apps.searo.who.int/PDS_DOCS/B5409.pdf
87. Homeland. 46% teaching posts vacant at medical, dental colleges. Hot News, 23, 2019.
88. Star Online Report. 46% teaching posts vacant at medical, dental colleges: Health minister tells JS. The Daily Star, 23, 2019.
89. Hasan S. Medical education in Bangladesh and its impact on doctors and patients. The Independent, June 08, 2018.
90. The Daily Prothom Alo. More medical colleges, but what about quality? Opinion, August 28, 2018.
91. The Daily Star. Unsatisfactory state of private medical education: The colleges need government's urgent attention. Editorial, 27, 2019.
92. Cockcroft A, Milne D, Oelofsen M, Karim E, Andersson N. Health services reform in Bangladesh: hearing the views of health workers and their professional bodies. BMC Health Serv Res. 2011 Dec 21; 11, 2:S8. doi: 10.1186/1472-6963-11-S2-S8.
93. Khan S. Anarchy rules healthcare system, Financial Express, July 09, 2017.
94. Zahid SH. High cost of treatment abroad. The Financial Express, October 20, 2019.
95. Mehta Simi, *et al.* "Measurement of Sustainable Development in India and Bangladesh." Lessons in Sustainable Development from Bangladesh and India, 2018, 79–101. doi:10.1007/978-3-319-95483-7_4.
96. Staff Correspondent. Hospitals cannot refuse to hand over dead patients to relatives for unpaid bills: High Court. Bdnews24.com, November 20, 2017.
97. UNB. HC orders release of dead bodies from hospitals even if bills are due. DhakaTribune, November 20th, 2017.
98. Ali, Muhammad Mahboob, and Anita Medhekar. "Globalization, Medical Travel and Healthcare Management in Bangladesh." Problems and Perspectives in Management. 2016; 14(2):360–375., doi: 10.21511/ppm.14(2-2).2016.12.
99. Ali Mm, Medhekar A. "Healthcare Quality of Bangladesh and Outbound Medical Travel to Thailand." Economy of Region, 2018; 14(2):575–588. doi: 10.17059/2018-2-19.