

A Study on Role of Medical Representatives in Pharmaceutical Promotion in Bangladesh

Md. Mahfujur Rahman¹, Md. Al-Amin^{2*}, Kazi Mahfuzur³

¹*Institute of Health Economics, University of Dhaka, Dhaka, Bangladesh*

^{2*}*Institute of Education and Research, University of Dhaka, Dhaka, Bangladesh*

³*Institute of Disaster Management and Vulnerability Studies, University of Dhaka, Dhaka, Bangladesh*

e-mail: mahfujih25@gmail.com¹, alamin.du428@gmail.com^{2}, kazimahfuz31@gmail.com³*

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Abstract: The pharmaceutical market in Bangladesh is highly concentrated and the top 10% of the company covered 70% of the market share. In this competitive market, pharmaceutical companies adopt aggressive marketing strategies to achieve greater market share, which sometimes crosses the limit. Every company employs medical representatives to survive and expand their share in this competitive market. This higher competition leads the pharmaceutical companies to be aggressive in promoting their drugs by hook or crook. The medical representatives adopt various strategies and make the physicians unethically prescribe extra medicines, antibiotics, and unnecessary drugs. Eventually, that burdens the patients with extra healthcare costs. The study was conducted using qualitative data. An interview-based research design was followed to collect data from healthcare providers, physicians, and medical representatives to explore the promotional strategy of the pharmaceutical companies. Healthcare providers, physicians and medical representatives from Dhaka, Gazipur and Magura districts participated in the face to face in-depth interviews (IDI). Their provided data was used to understand the marketing strategy and how it influences the relevant sectors. The health sector in Bangladesh is highly structured where the pharmaceutical companies play an important role to fulfill the drug demand of the people at the home and abroad as well as store foreign currency by exporting drugs. Sometimes, the unethical practices of the physicians and pharmaceutical companies increase the health care expenditure. The medical representatives of a company play a key role to create aggressive marketing which increases the health care expenditure. The physicians prescribe inappropriately through the influence of medical representatives, which transfer the patient's family to catastrophic health expenditure.

Keywords: Medical Representatives, Physicians, Pharmaceutical Industry, Health, Bangladesh.

1. Introduction

Bangladesh is a developing country whose pharmaceutical sectors are interestingly increasing day by day and contributing to the GDP by earning foreign currencies from exporting different type's generic drugs in foreign countries including the developed regions such as European Union and the USA [1]. After introducing the National Drug Policy- 1982, the pharmaceutical sector in Bangladesh improved a lot. Before that, the country used to import more than 60%- 70% of the medicine from various

countries [2]. In recent years, pharmaceutical companies fulfill the national demand of this country. About 97% of the local demand is fulfilled by the local companies and the rest is imported. The imported drugs are mainly the drug of cancer and vaccinations for viral diseases and hormones. Bangladesh exports drugs to more than 127 countries all over the world [3]. The pharmaceutical sector's growth is more than 15% higher than any other country in the world [1]. The pharmaceutical sector of Bangladesh is dominated by domestic companies. There are about 231 registered

pharmaceutical companies whose approximate market share is about BDT 76,500 million per year .

Table 1: Respondents' Info

Respondents	Number of IDIs	
General Medical Representatives	36	23 from Dhaka 13 from Magura
Veterinary Medical Representatives	10	4 from Magura 6 from Gazipur
Dispensary Owners	8	4 from Dhaka 4 from Magura
Village Quack	8	8 from magura
Total	62	62

. The local companies hold around 70% of the market share while the multi-national companies hold the rest. The local pharmaceutical companies produce 82% of the local demand, multi-national companies produce around 13% and the rest is imported [1]. The medical representatives (MRs) of the pharmaceutical companies play a vital role to promote pharmaceutical products [4]. The MRs adopt various strategies to influence the physicians to prescribe their own companies' drugs [1, 5, 6, 7, 8]. Sometimes these strategies are unethical and increase the patient health expenditure [9]. The pharmaceutical companies expend 15%-25% of the total budget for pharmaceutical promotion. At the same time, out-of-pocket expenditure on health is about 67% [10]. From this 67%, more than 70% of the expansion is related to purchasing medicine cost which is increasing day by day.

The MRs' strategies influence physicians. They create an environment that makes the physicians prescribe extra drugs and antibiotics for the patients' treatment, though it's not necessary. As a result, the health expenditure of a household turns into an enormous amount. Sometimes, the patients have to pay a lot such as borrowing money or selling valuable assets to bear the expense. Besides, antibiotic resistance occurs due to overuse and inappropriate prescription of antibiotics [11, 12]. The physicians prescribe antibiotics for common cases: respiratory infection, fever, and urine infection wherein about 51.9% of cases, the antibiotic is unnecessary [13]. This study seeks to find out the role of medical representatives in pharmaceutical promotion. The findings of the study may be able to help the policymakers in developing their policy, as it aims at exploring the understanding of the pharmaceutical companies' MRs strategies in promoting their products and their impacts on the healthcare system.

2. Methodology

The study was conducted using qualitative data. Data was collected basically from primary sources. An interview-based research design was followed to collect data from various participants. General medical representatives, veteran medical representatives, dispensary owners and village quacks participated in the in-depth interview (IDI). A total of 62 participants were involved in the IDI (Table 1). 46 participants were medical representatives. Among them

36 were general medical representatives, 23 were from Dhaka, and 13 were from Magura and 10 were veteran medical representatives, 4 from Magura and 6 from Gazipur. 8 dispensary owners were among the participants, 4 from Magura and 4 from Dhaka. 8 village quacks participated in the IDI, all from Magura.

A checklist was developed consulting with several professionals of the health sector to conduct the in-depth interview (IDI). A Pilot study was conducted to test the checklist and some modifications were brought after that. The original data collection ended in December 2019. This study also used data from secondary sources. As the pharmaceutical industry is one of the largest sectors in Bangladesh and it's related to the life and death of people, there are many studies and literature available which were conducted by various institutes and professionals. The secondary data had been collected from different articles, thesis, journals, materials, and documents, etc.

3. Results

Bangladesh is a developing country in which the pharmaceutical sectors are increasing day by day. As the new pharmaceutical companies entered into these sectors, each company employed medical representatives (MRs) for pharmaceutical promotion to compete with each other. The MRs work for their company's interest to convince physicians to prescribe their own companies' drugs. Every company employed different types of MRs for different types of drug-like general patient drug and the drug for animal and agricultural products. The study showed that all 36 participants in IDIs acknowledged their influence on pharmaceutical prescriptions. The MRs contracted with physicians, quacks, dispensary owners with different types of gifts, literature, drug samples, etc. to achieve their target. The contracting process between them is discussed below.

Contracting Strategy between MR and Village Quack:

Basically, village quacks are lowering educated and have a lack of knowledge about the drug and its prescription pattern. They open a dispensary to sell medicine among the people in their locality. Thus, they become familiar with drugs and gather knowledge about it. Rudimentary, they prescribe the drug for non-severe and common diseases

which is witnessed in the rural local areas. Quacks have a lack of scientific knowledge and training in medical science; indeed, they are from a non-science background. On the contrary, quacks in urban areas are more educated compared to rural ones. They achieve a knowledgeable course and training in medicine. The medical representatives communicate regularly with both rural and urban quacks to provide some knowledge on the drug-like name of the drug, use of the drug, dose form, and route of administration, contra-indication, side effects, and storage of the drug, and so on. This information has been transferred to MRs from their concerned companies. MRs not only meet quacks regularly but also arrange seminars to provide information about drugs. The meeting between MRs and quacks has occurred two or three times in a month.

Quacks are double-benefited from MRs and their relevant company due to ownership of the pharmacy and the advantage of prescribing drugs. Some things which are detrimental to our pharmaceutical and health sector caused by the relationship between quack and MRs which has not been confined in that period rather it is transferred to present unethically. The MR offers several packages of benefit to the quacks when they meet. Almost all companies provide a 12% discount. Quacks are gotten a 12% discount on drug prices from the top 10 or top 20 companies. It is some portion higher in the small companies according to quacks. When an MR visits a quack, he provides a double benefit. Because when the medical representative visits the quacks, at that time he contracts with both the salesman and the prescriber but in the case of MBBS doctor and dispensary, he needs to contract separately. The MRs are more friendly to the quacks than the physicians and dispensary because the quack isn't educated enough and for any matter, the medical representative provides them information. At the same time, the village people visit the quack for any problems and believe them. So, if the medical representative convinces the quack, it is more beneficial to them to increase sales of their company's products.

Every pharmaceutical company provides a special offer to the quack. To discuss with a quack, he informed that a few days ago, one MR provides him soybean oil. Another quack informed us- "A company provides a package that if we buy medicine almost BDT 10,000, the MR said the company provides us a beautiful blanket. And if we buy four boxes azithromycin, the MR provides one box free." When we ask him- "If you receive the offer, what is your evaluation about the offer?" He replied- "Our aim is to sale all the drugs and purchases new drugs". And he also said- "our prescription is a word for word to the MBBS doctors. Taking the drug from us, the patient becomes well." We asked- "Do your activities increase the health expenditure?" He replied- "For any types of problem, the MBBS doctors give tests. But we provide only simple medicine and the patient becomes well. Thus, we save the patient's money."

Then when we asked MRs- "Is it fair or ethical to offer the package?" They replied- "There are different types of firms in the market which are competitive. If we aren't doing these types of work, how will the company sustain itself? Without knowing about the drug why the physicians prescribe our drug. Besides, like other products, advertisements aren't permitted via radio, television for drugs. We only inform the physicians about the drug's pros and cons."

Contracting Strategy with Dispensary Owners: The medical representatives are not only confined to the doctors but also contract with the dispensary owners. From dispensaries, they receive orders and then supply those types of drugs. One MR says- "Sometimes the owner of the dispensaries misbehaves with us. We wait from hour to hour for a single order. Again, some are friendly and cooperative to us and offer proteinases meal or tea and biscuits." The MRs observe the doctors regard through dispensaries. Because after receiving a prescription, the patients visit the dispensaries to buy the prescribed drugs. So, the MRs can easily monitor the doctors who are engaged to prescribe.

The Promotional Activities in the Case of Veterinary Medicine and Agricultural Germicide: Every pharmaceutical company employs medical representatives for veterinary medicine and agricultural germicide. We took three IDIs with veterinary MRs about their activities. Their activities are also the same as the general MRs. They also visit the veterinary doctors and quacks regularly. We asked an MR- "How can you conversate with the doctors?" He said- "I contract some doctors who prescribe our company drug. So, we provide them cash for a certain period. To regulate these, I visit local dispensaries in which companies drug sales more." Another MR said- "I provide the veterinary drug to the quack and at the same time animal doctors. My process is the same as the general MRs."

Promoting Strategy between MRs And Registered Physicians: The MRs visit MBBS doctors regularly for pharmaceutical promotion in urban areas, thus the physicians gather information about the drug. The MRs provide a sample to physicians from different types of drugs.

The MRs play an active role in pharmaceutical promotion in Dhaka city and district town. They provide offers to physicians. Some accept these offers, while from an ethical point of view, some reject the offers but the first types are more than the second.

The physicians prescribe a company's drug at a certain level of time when he is committed not to prescribe any other company's drug. The MRs check the prescription of the physicians who are committed. In this situation, the contract value of that doctor is more, if the physicians are more popular than others. The company provides cash, gift, and literature to the physicians. When a big contract comes,

the MR doesn't contract directly to the physicians rather taking help from the regional manager to contract with the physician. When renowned doctor contracts with a company, they use it as the brand of that company. The MRs express the contracting strategy with physicians as some prefer cash, some prefer gift, some prefer both cash and gift.

The Concept of Antibiotic and Its Resistance: Sir Alexander Fleming raised the alarm regarding antibiotic overuse when he noticed the public demand. The overuse of antibiotics started in Bangladesh because both the doctors and patients prefer to prescribe antibiotics. Recently the physicians are influenced by the MRs and prescribe the antibiotic unconsciously which is harmful to the economy and health. Antibiotics are unregulated and available all over the country. Lack of regulation in antibiotics results that it is easily accessible which promotes overuse.

When we asked both the quacks and the MRs about antibiotics generation, some MRs experts about antibiotics generation whereas quacks didn't so knowledgeable about antibiotics generation. The MRs also know the antibiotic resistance. One MR told- "At that reason, we suggest quacks prescribe mainly azithromycin". "When you prescribe antibiotics to a patient?" We asked a quack. He answered- "Suppose a patient has been suffering from fever for three days. We prescribe antibiotics and the patient comes round soon. Besides, we observe the registered doctor's prescription in that case."

Again, most of the MRs do not have enough knowledge about antibiotic resistance. The MRs mainly concern about fulfilling their target and aren't aware of it. When we asked an MR- "Do you influence a doctor to prescribe antibiotics?" He replied- "As my job related to ethics, I force less to prescribe antibiotics. But some medical representatives convince the doctors to prescribe antibiotics." "Do you know antibiotic resisted in recently quickly?" we asked. He answered- "We work nothing but only the representatives of a company."

From secondary data, MBBS students are also less informed about antibiotic resistance. A study showed that the question pattern of MBBS examination had less emphasis on the antimicrobial and its resistance [10]. As a result, after completing the MBBS degree, the physicians start unethical practice and prescribe antibiotics by the influence of medical representatives.

4. Discussion

Pharmaceutical sectors are the top leading export earning sectors in Bangladesh. It has contributed 1.85% of GDP which contribution to government revenue increases from 2012 to 2017 [1]. The pharmaceutical market is almost self-sufficient to fulfill the local demand. Approximately 97% of the drugs are produced locally and are exporting to 127 countries [3]. The pharmaceutical companies employ medical representatives to contract with physicians to

motivate them to prescribe their own company's drugs [14]. Medical representatives regularly visit doctors to share scientific information and the competitive advantages of their drugs [15]. Every pharmaceutical company expands 15% to 25% of their total budget to the promotional activities where the MRs play a significant role to promote the drugs. The larger the size of a company, the greater it's promotional activities. Every company trains MRs on how to communicate with the physicians. The MRs who convince the physician are sustained in their job. The way an MR convinces the doctors that were discussed previously. An MR opines that the physicians, who are needed to be convinced, require collecting all the information regarding him, such as- his birthday, marriage anniversary, about his children and so much.

The physician is influenced by MR to suggest their company's drug to a patient. The more the sale will be, the more commission the physician will get from the company following their contract with MRs. They also monitor the physicians' prescription to see how much medicine they prescribe. From economic temptation, the physicians retreat from their ethical characteristics and prescribe unethically [1, 5, 6, 7, 8]. As a result, the low-income people and the chronically ill people suffer much, and their families have to bear catastrophic health expenditure. A pharmaceutical expert opined that for most of the diseases one or two medicines are enough but the doctor suggests over the relevance. He also added that the patient always tries to complete the course from the specific brand of medicine suggested by the doctor. In both developed and developing countries, antibiotics and other medications are widely used as growth supplements in livestock [16]. The MRs play an important role to promote the plants and animals' drug in the country. The owners of the firms are generally lower educated and do not have enough knowledge about the drugs. They mainly depend on the quacks or veterinary doctors or the dispensaries who focus on profit and suggest vitamins, antibiotics, and other related tablets for the animals. As a result, the animals become fat and look healthy. Through the animals, antibiotics and other chemicals entered into the human body. When the individual is affected by any disease, he needs high power antibiotics which increase the health expenditure.

A study showed that the children were also affected more by inappropriate prescription of antibiotics where 26% of antibiotics were purchased without a prescription [17]. The unconscious antibiotic prescription occurred mainly due to unethical practices. The MRs influenced the quacks to prescribe the antibiotic and vitamins in normal cases [18]. In Razbari, 100,000 doses of antibiotics were sold in one month without prescription [19]. Again, the pharmacists medicated more than 92% of cases [20]. In the future, it would be seen that the antibiotic created resistance in the human body because of the misuse. As a result, the new generation of antibiotics is required to be invented because of the

resistance of the previous generation. This problem mainly occurred due to inappropriate prescription and overuse of antibiotics. As a result, health expenditure also increases day by day [21].

The drug policy in 2017, is conventional which is mainly influenced by political pressure. So, the Directorate General of Drug Administration (DGDA) can play an important role to regulate the drug market. It must apply strong rules to the physicians for ethical practices. If it amends the rules to drug prescription patterns and regulates it through other health personnel, the unethical practice must be removed. The authority can arrange different seminars to increase awareness among the medical representatives, physicians, and quacks about antibiotic resistance and inappropriate drug prescription. It also needs to increase the accountability between the physicians and the pharmaceutical companies. Laws must be created to control the promotional cost of a firm. Suppose each company can't expand more than 5% of its total budget on promotional activities. If the budget controlling is applied in the pharmaceutical sector, the cost of the drug will fall. Again, the company is bound to spend less on the medical representatives for promotional activities.

5. Conclusion

The pharmaceutical companies promote their drug unethically through medical representatives to violate the rules and regulation of drug promotion to earn more revenue. Studies showed that unconscious and inappropriate prescription patterns will resist the antibiotics where the medical representatives play a vital role in unethical practices. As a result, new antibiotics will be needed to invent which increases the cost of treatment. Getting unfair offers from the medical representatives, the physicians prescribed unconsciously, thus the cost of healthcare increases day by day and the low-income family go under the catastrophic health expenditure to bear the costs. So, we should be conscious and follow the rules and regulations of the drug policy for getting a better future. So, the physicians should prescribe appropriately by considering the patient as his relatives and fully maintain the Geneva Declaration and the DGDA's rules and regulations.

References

- [1] Hossain M. Management and marketing practices and problems of Pharmaceuticals Industry in Bangladesh. 2014 [cited 2020 Nov 15]; Available from: <http://dspace.bracu.ac.bd/xmlui/handle/10361/3263>
- [2] Murshid ME, Haque M. Bangladesh National Drug Policy 1982-2016 and Recommendations in Policy Aspects. Eurasian J Emerg Med. 2019 Jun 20;18(2):104–9. <https://doi.org/10.4274/eajem.galenos.2019.43765>
- [3] Islam S, Rahman A, Mahmood AK Al. Bangladesh Pharmaceutical Industry: Perspective and the Prospects. Bangladesh J Med Sci [Internet]. 2018 Sep 19 [cited 2020 Nov 14];17(4):519–25. <http://dx.doi.org/10.3329/bjms.v17i4.38306>
- [4] Bangladesh Health Watch (BHW). Bangladesh Health Watch Report 2009: how healthy is health sector governance? 2010 [cited 2020 Nov 14]; Available from: <http://dSPACE.bracu.ac.bd/xmlui/handle/10361/597>
- [5] 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 Dec 1;16(1). <https://doi.org/10.1186/s12910-015-0075-z>
- [6] Raheem Ahmed R. Pharmaceutical drug promotion practices in Pakistan: Issues in ethical and non-ethical pharmaceutical practices Relationship between Demographic and Internet Usage View Project Social Loading in Group Activities View project. Artic Middle East J Sci Res [Internet]. 2012 [cited 2020 Nov 14]; Available from: <https://www.researchgate.net/publication/261360809>
- [7] Bansal RK, Das S. Unethical relationship between doctors and drugs companies. JIAFM [Internet]. 2005 [cited 2020 Nov 14];7(1):40–2. Available from: <http://www.indianjournals.com/ijor.aspx?target=ijor:jiafm&volume=27&issue=1&article=010>
- [8] Rohra DK, Gilani AH, Memon IK, Perven G, Khan MT, Zafar H, et al. Critical evaluation of the claims made by pharmaceutical companies in drug promotional material in Pakistan. J Pharm Pharm Sci [Internet]. 2006 Feb 14 [cited 2020 Nov 14];9(1):50–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/16849008/>
- [9] Ahmad M, Akhtar N, Awan MHA, Murtaza G. Ethical Evaluation of Pharmaceutical Marketing in Pakistan. Acta Bioeth [Internet]. 2011 [cited 2020 Nov 14];17(2):215–24. <http://dx.doi.org/10.4067/S1726-569X2011000200008>
- [10] National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International. Bangladesh demographic and health survey 2011. NIPORT, Mitra and Associates, and ICF International [Internet]. 2013 [cited 2020 Nov 14]. Available from: <https://dhsprogram.com/publications/publication-fr265-dhs-final-reports.cfm>
- [11] Ventola CL. The antibiotic resistance crisis: causes and threats. P T J [Internet]. 2015 [cited 2020 Nov 14];40(4):277–83. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4378521/>

- [12] Faiz M, Basher A. Antimicrobial resistance: Bangladesh experience. *Reg Heal Forum* [Internet]. 2011 [cited 2020 Nov 15];15(1):1–8. Available from: <https://www.semanticscholar.org/paper/Antimicrobial-resistance-%3A-Bangladesh-experience-Faiz-Basher/7ebd071a34156b6558130154918f76aa607f42ea?p2df>
- [13] Rahman MS, Huda S. Antimicrobial resistance and related issues: An overview of Bangladesh situation. *Bangladesh J Pharmacol* [Internet]. 2014 May 10 [cited 2020 Nov 15];9(2):218–24. Available from: www.banglajol.info
- [14] Arafat SMY, Ahmed Z. Medical Representative in Bangladesh: a Job with Different Pattern. *Int J Acad Res Manag Bus* [Internet]. 2016 [cited 2020 Nov 15];1(1):47–51. Available from: <https://ideas.repec.org/a/iap/ijarmb/v1y2016i1p47-51.html>
- [15] Bala K, Sharma K. Role of Medical Representatives in Influencing Medicine Prescription Behaviour of Doctors. *J Bus Thought* [Internet]. 2019 Mar 4 [cited 2020 Nov 15];10(0):39–52. Available from: <http://www.informaticsjournals.com/index.php/jbt/article/view/23767>
- [16] Woolhouse M, Ward M, Van BB, Farrar J. Antimicrobial resistance in humans, livestock and the wider environment [Internet]. Vol. 370. *Philosophical Transactions Of The Royal Society of London. Series B, Biological Sciences*; 2015 [cited 2020 Nov 15]. p. 1931–1931. Available from: <https://www.sid.ir/en/journal/ViewPaper.aspx?ID=493459>
- [17] Baqui AH, Black RE, Arifeen S El, Yunus M, Zaman K, Begum N, et al. Zinc therapy for diarrhoea increased the use of oral rehydration therapy and reduced the use of antibiotics in Bangladeshi children. *J Heal Popul Nutr* [Internet]. 2004 [cited 2020 Nov 15];22(4):440–2. Available from: <https://pubmed.ncbi.nlm.nih.gov/15663177/>
- [18] Chowdhury F, Rahman M, Huq M, Begum S. Rationality of drug uses: its Bangladeshi perspectives. *Mymensingh Med J* [Internet]. 2006 [cited 2020 Nov 15];15(2):215–9. Available from: <https://www.banglajol.info/index.php/MMJ/article/view/48>
- [19] Roy J. Health status, treatment and drug use in rural Bangladesh: A case study of a village. *Aust J Rural Health* [Internet]. 1997 May 1 [cited 2020 Nov 15];5(2):70–5. Available from: <http://doi.wiley.com/10.1111/j.1440-1584.1997.tb00241.x>
- [20] Ahmed SM, Hossain MA. Knowledge and practice of unqualified and semi-qualified allopathic providers in rural Bangladesh: Implications for the HRH problem. *Health Policy (New York)* [Internet]. 2007 Dec [cited 2020 Nov 15];84(2–3):332–43. Available from: <https://pubmed.ncbi.nlm.nih.gov/17618702/>
- [21] Bhatt P. Study on Influence of Medical Representative in Conversation of Doctor’s Prescription in India. *Glob J Manag Bus Research* [Internet]. 2018 [cited 2020 Nov 15];18(3-E). Available from: <https://journalofbusiness.org/index.php/GJMBR/article/view/2470>

Authors Profile

Md. Mahfujur Rahman is currently doing his Master of Philosophy (M.Phil.) in Health Economics at University of Dhaka. He received his Master of Social Science (MSS) and Bachelor of Social Science (BSS) from Institute of Health Economics, University of Dhaka, Dhaka, Bangladesh. Currently, he is also working on various research projects related to public health. His research is mainly related to health economics, public health, toxicology and environment.

Md. Al-Amin has received his Bachelor of Education (B.Ed.) from Institute of Education and Research, University of Dhaka, Dhaka, Bangladesh. Currently, he is doing Master of Education (M. Ed.) from the same institute. He is also working as a freelance researcher.

Kazi Mahfuzur has received his Bachelor of Disaster Management (BDM) from the Institute of Disaster Management and Vulnerability Studies, University of Dhaka, Dhaka, Bangladesh. Currently, he is doing his Master of Disaster Management (MDM) from the same institute. At present, he is working as a freelance researcher. His research interest is mainly related to disaster management, emergency response, risk reduction, GIS, health, climate change and environment.