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Editorial

Marine City Medical College Journal

Medical Mnemonics

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Mnemonic techniques are valuable learning aids that help recall and retain important information. These techniques date back to ancient Greece and have stood the test of time as people have experienced success using them to recollect crucial details. . The word 'Mnemonics' is derived from the ancient Greek word 'Mnemonikos'- meaning of memory or related to memory and related to 'Mnemosyn' (Remembrance) Goddess of memory in Greek mythology. Both of these words are derived From 'Mneme' (Remembrance, memory). It is actually the art of memory. Ancient Greeks and Romans distinguished between two types of memory: The 'natural' memory and 'artificial' memory. The former is inborn, the one that every one uses instinctively. The later in contrast has to be trained and developed through the learning and practice of a Mnemonic techniques.[1,2]

As a medical student, a healthcare professional, or working in a medical-related field, sometimes it is difficult to remember or retain critical medical information especially during facing many medical terminologies in everyday life. Sometimes we are supposed to remember the specifics of human anatomy, infectious diseases, chronic illness, and drugs while giving prescription. So we have to learn about useful mnemonic techniques that will help us remember essential information.[3]

There are 12 useful mnemonic techniques[4]

i) Acronyms

An acronym can be created by using the first letter of each word in a phrase or list of information to form an easy-to-remember word. We can use acronyms to remember the signs of a disease or steps to heal an illness.

Some medical acronyms include:

'FAST': An acronym used to remember the signs of a stroke -Face, Arms, Speech, Time.

'SOCRATES': An acronym used in the assessment of pain-Site, Onset, Character, Radiation, Associated Symptoms, Timing, Excarbeting and Relieving factors, Severity.

ii) Expression or Acrostics Mnemonics

Similar to creating an acronym, expression mnemonics allows you to create an easy-to-remember phrase with the first letter of each word. Example is

· "Oh, Oh, Oh, To Touch And Fondle A Gorgeous Very Super Human": To remember the 12 cranial nerves- Olfactory nerve, Optic nerve, Oculomotor nerve, Trochlear nerve, Trigeminal nerve / Dentist nerve, Abducens nerve, Facial nerve, Auditory nerve, Glossopharyngeal nerve, Vagus nerve, Spinal accessory nerve, Hypoglossal nerve.

iii) Musical Mnemonics

Using a popular catchy tune is another way to go about preparing yourself for an exam. This type of technique uses music to organize information in order to enhance memory and increase the chances of recalling the information.

iv) Create a Memory Palace

Perhaps the best mnemonic techniques medical students can use is the memory palace, also referred to as the Method of Loci. To create a memory palace, you'll need to use a location familiar to you.

For instance, one can take the name of one of the diseases on his list and put it in his apartment elevator.

v) Mind Map

Another helpful tool when studying for a medical exam is creating a mind map. This technique involves focusing on one central idea. Then, create a diagram of ideas, concepts, facts, and figures.

vi) Chunking[5]

Chunking is a mnemonic device that involves dividing pieces of random information and grouping them into clusters. Then, you can use a particular format to make it easier to remember them.

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It can be used to break down a long list of medical terms. For instance, if we are learning about examples of antidepressants. We can start by grouping the various types of antidepressants:

- Selective Serotonin Reuptake Inhibitors (SSRIs).
- Serotonin-Noradrenaline Reuptake Inhibitors (SNRIs).
- Noradrenaline And Specific Serotonergic Antidepressants (NASSAs).
- Tricyclic Antidepressants (TCAs).
- Serotonin Antagonists and Reuptake Inhibitors (SARIs) and Monoamine Oxidase Inhibitors (MAOIs).

Then proceed to learn about each drug that falls under each type of antidepressant.

vii) Rhyme Mnemonics

This type of mnemonic works by grouping information in the form of a rhyming poem.

An example of a medical rhyme mnemonics is the one used to remember the anatomy of the tarsal bones of the feet: "Chubby, Twisted, Never Could Cha ChaCha ":Calcaneus, Talus, Navicular, Cuboid, Cuneif orms (X3).

viii) Note Organization[6]

This is a good mnemonic technique whereby the main ideas are organized into notes. This can be accomplished in three ways: By using note cards, outlines or the Cornell system.

Note Cards

If you wish to memorize new medical information, you can group them into a question and answer section in a note card. The questions will be in front of the card, while the answers will be at the back of the card.

Example: What are the functions of the frontal lobe ?

Outlines : Voluntary movement, speech, attention, reasoning and cognitive abilities

Drawing up an outline of the key ideas you wish to memorize will help you focus on the vital information. This is achieved by separating primary information from other details.

Cornell System

This type of note organization involves drawing a vertical line 3 inches from the left margin of a notebook. Then, the main ideas or the questions for the main ideas are placed on the left, while the answers are placed on the right.

ix) Connection Mnemonics[7]

This mnemonic technique involves connecting the fact you wish to remember with information you already know.

For instance, if you just met someone named "Allen" and there is a high possibility that you will forget their name, you can connect "Allen Avenue" to their name.

x) Visual Mnemonics[7,8]

In this kind of strategy, visual imagery assists in recalling information either by mental pictures or real sketches. You can transform the information into a visual image in your mind's eye to remember the name. For instance, if you want to recall Tricyclic Antidepressants (TCAs), you can visualize a mental image of a tricycle. Likewise, if you wish to remember Hippocampus, the brain structure that processes memories, you can imagine seeing a hippo on campus.

xi) Peg Mnemonics[9]

This method is used to recall a sequential or numbered list of information. If you want to memorize a long list of information in the correct order on the list, this is best.

xii) Spelling Mnemonics[1]

This technique can be used to recall a difficult word you find hard to spell correctly by using a pattern, phrases or rules.

There are many medical terms like that, and this strategy will help you recall their spellings.

For instance, if you wish to recall the spelling of "arithmetic," you can say, "A Rat In The House May Eat The Ice Cream."

CONCLUSION

Mnemonic techniques are needed to recall medical terms, information, and concepts. To combat challenges of memorizing them, a good option is to try these devices. Due to changes in curriculum of undergraduate medical students and reduction of allocated course time teaching learning has become challenging. But students never tried mnemonics which is better for recalling knowledge of different discipline. Teacher's experience regarding this technique is not up to date . Same is the scenario of other disciplines of medical science and day to day clinical practice. Hence to Improve memorization and ability to retain crucial medical information we have to try these techniques during our study or presentation at work.

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A Systematic Review and Meta-Analysis of Glucocorticoids Treatment in Severe COVID-19 : Methylprednisolone Versus Dexamethasone

Hong S, Wang L, Li S, Liu J, Qiso. BMC Infection Diseases. 2023;23:290.

Abstract

Background: Glucocorticoids are a class of corticosteroids, which are a class of sterpoid hormones, which involved in the carbohydrate metabolism. The preferred agent of glucocorticoids in the treatment of patients with severe COVID-19 still controversial. This study aimed to compare the eficacy and safety of methylprednisolone and dexamethasone in the treatment of patients with severe COVID-19.

Methodology: By searching the electronic literature database including PubMed, Cochrane Central Register of Controlled Trials and Web of Science, the clinical studies comparing methylprednisolone and dexamethasone in the treatment of severe COVID-19 were selected according to the inclusion criteria and exclusion criteria. Relevant data were extracted and literature quality was assessed. The primary outcome was short-term mortality. The secondary out comes were the rates of ICU admission and mechanical ventilation, PaO_2/HO_2 ratio, plasma leves of C-reactive Protein (CRP) ferritin and neutrophil/lymphocyte ratio, hospital stay and the incidence of severe adverse events. Statistical pooling applied the fixed or random effects model and reported as Risk Ratio (RR) or Mean Difference (MD) with the corresponding 95% Confidence Interval (CI). Meta-analysis was performed using Review Manager 5.1.0.

Results: Twelve clinical studies were eligible, including three Randomized Controlled Trials (RCTs) and nine non-RCTs. A total of 2506 patients with COVID-19 were analyzed, of which 1242 (49.6%) received methylprednisolone and 1264 (50.4%) received dexamethasone treatment in general, the heterogeneity across studies was significant and the equivalent doses of methylprednisolone were higher than that of dexamethasone. Our meta-analysis showed that methyloprednisolone treatment in severe COVID-19 patients was related to significantly reduced plasma ferritin and neutrophil/lymphocyte ratio compared with dexamethasone and that no significant difference in other clinical outcomes between the two grops was found. However, subgroup analyses of RCTs demonstrated that methyl-prednisolone treatment was associatec with reduced short-term mortality and decreased CRP level compared with dexamethasone. Moreover, subgroup analyses observed that severe COVID-19 patients treated with a moderate dose (2 mg/kg/day) of methylprednisolone were related to a better prognosis than those treated with dexamethasone.

Conclusions: This study showed that compared with dexamethasone, methylprednisolone could reduce the systemic inflammatory response in severe COVID-19 and its effect was equivalent to that of dexamethasone on other clinical outcomes. It should be noted that the equivalent dose of methylprednisolone used was higher. Based on the evidence of subgroup analyses of RCTs, methylprednisolone, preferably at a moderate dose, has an advantage over dexamethasone in the treatment of patients with severe COVID-19.

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Outbreak of Cosmetology : Acquired Mycobacterium Abscessus Skin Infection

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Mycobacterium abscessus is one of the common clinical Non-Tuberculous Mycobacteria (NTM). Infections caused by Non-Tuberculous Mycobacteria (NTM) are increasing globally and are notoriously difficult to treat due to intrinsic resistance of these bacteria to many common antibiotics. Non-Tuberculous Mycobacterium (NTM) exists in the environment and within water sources. Nontuberculous mycobacterium has been identified on medical devices, including surgical instruments and needles and has become the most common pathogen associated with rapidly growing mycobacterial infections in the lungs and skin.

Six patients presented to the dermatology department due to skin abscess of 1 month's duration. They all underwent a catgut implant procedure at acupoint for treatment of obesity with materials made by the same manufacturer. The patients were treated with β-lactam antibiotics without improvement. Physical examination of multiple patients revealed numerous warm, red, edematous, tender, fluctuant, and purulent draining nodules on the abdomen (Figure 1). Microscopic examination revealed gram-positive bacilli with positive acid-fast staining and elongated branching morphology identified as Mycobacterium abscessus by matrix-assisted laser desorption/ionization time of flight mass spectrometry (Figure 2). All 6 patients were treated with wound debridement and drainage, as well as with antibiotics (Including amikacin and clarithromycin combined with aminolevulinic acid photodynamic therapy) which can promote antibiotic sterilization.

Treatment of M abscessus infections remains particularly difficult, as this species is extremely resistant to antibiotics. A combination of at least 2 antibiotics over a period of 4 months should be used for M abscessus, of which macrolides are the most commonly used drugs. Amikacin and clarithromycin are the cornerstone of treatment for M abscessus.2 Treatment varies according to the subtype of M abscessus complex. The subspecies massiliense is generally sensitive to macrolides, such as clarithromycin, whereas subspecies abscessus and subspecies bolletti are treated according to their susceptibility to macrolide antibiotics. Treatment with aminolevulinic acid photodynamic therapy can not only kill M abscessus, but also enhance the antibacterial effect of some antibiotics, including clarithromycin, by reducing the integrity of cell membranes.

Figure 1 Cutaneous abdominal skin abscess formation of a patient after infection with Mycobacterium abscessus

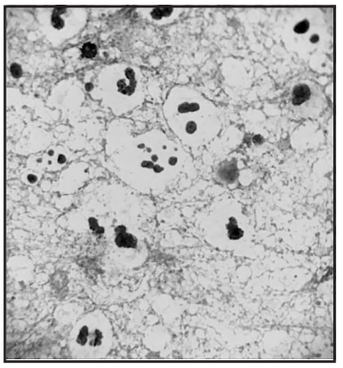

Figure 2 Positive acid-fast staining of direct microscopic examination. 1000

Mycobacterium abscessus skin infection occurs frequently after cosmetic surgery and medical operations. Practitioners should sterilize instruments to prevent infection and report diagnosed cases to applicable health departments to facilitate outbreak detection.

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Review Article

Marine City Medical College Journal

Antimicrobial Resistance : A Review

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ABSTRACT

Background: What is antimicrobial resistance?
Antimicrobial Resistance (AMR) occurs when bacteria, viruses, fungi and parasites change over time and no longer respond to medicines making infections harder to treat and increasing the risk of disease spread, severe illness and death. Antimicrobial resistance is an important concern for the public health authorities at global level. This paper discusses the situational analysis of antimicrobial resistance with respect to its problem. Determinants and challenges ahead with strategies required in future to reduce the burden in Bangladesh.

Methodology : This current study is a narrative review to published studies and articles by using Medline and Google. Structured search strategy using appropriate key words and title.

Conclusion: Evidence from the literature suggests that the knowledge regarding antibiotic resistance in the population is still scarce. Therefore, it the resistance to the antibiotic needs to be curbed, the only way shall be to educate the patients and the general public.

Key words : Antimicrobial resistance; Challenges; Knowledge; Public health; Rational use; Strategies; Spread of resistance.

INTRODUCTION

Antimicrobial Resistance (AMR) occurs when bacteria, viruses, fungi and parasites change over time and no longer respond to medicines making infections harder to treat. While it is a natural evolutionary phenomenon that happens as microbes adapt to naturally produced antimicrobials, the indiscriminate use of antimicrobial drugs has accelerated its progress. Antimicrobial Resistance (AMR) is a critical issue in health care in terms of mortality, quality of services, and financial damage. In the battle against AMR, it is crucial to recognize the impacts of all four domains, namely, mankind, livestock, agriculture, and the ecosystem. Several pathways, including hospital effluent, agricultural waste, and wastewater treatment facilities, have been identified as potential routes for the spread of resistant bacteria and their resistance genes in soil and surrounding ecosystems. AMR threatens effective treatment of infections and leads to prolonged duration of illness, higher morbidity and mortality rates, and increased cost of health care. The antimicrobial production pipeline has gone dry, with no new antimicrobials being produced and released into the market. indiscriminate sale of with minimal regulation, The main drivers of antimicrobial resistance include the misuse and overuse of antimicrobials, Over-The-Counter (OTC) antimicrobials sale, lack of access to clean Water, Sanitation and Hygiene (WASH) for both humans and animals, poor infection and disease prevention and control in health-care facilities and farms; poor access to quality, affordable medicines, vaccines and diagnostics, lack of awareness and knowledge and lack of enforcement of legislation.[1]

SEARCH STRATEGY

Available studies and abstract were identified through Medline data bases (2010-2022) and Google. Key search topics were "Antimicrobial Resistance : A Review" and relevant articles from the references lists of reviewed articles were also searched. The search terms were the following keywords used in combination : "Antimicrobial resistance; Challenges; Knowledge; Public health; Rational use; Strategies; Spread of resistance."

DISCUSSION

Antimicrobial Resistance: A Global Concern

The emergence and spread of drug-resistant pathogens that have acquired new resistance mechanisms, leading

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to antimicrobial resistance, continues to threaten our ability to treat common infections. AMR causes an estimated 700,000 deaths annually worldwide, and if not properly addressed, the number could grow to 10 million per year alongside a cumulative cost of $100 trillion by 2050[2]. In 2019, AMR cost 389,000 lives in South Asia, 84,000 of which were children under 5. In the same year, 1.27 million deaths were caused by AMR worldwide. In many countries, more than 40% of infections are now due to bacteria that are resistant to antibiotics. Hospital Acquired Infections (HAI) have a greater impact than community infections and AMR is mostly hospital acquired. In AMR 75% of burden is hospital acquired[3].

The Current State of Antimicrobial Resistance among the Common Bacterial Infections

A recent systemic analysis of AMR data published in Lancet from 204 countries and territories paints a grim picture of the current burden of AMR globally, using clinical, pharmaceutical, and surveillance data from many sources, researchers estimated that 4.95 million deaths were associated with infections caused by antibiotic-resistant organisms in 2019. Rates of death were highest in Lower Middle-Income Countries (LMIC). The six leading pathogens for death were Escherichia coli, Staphylococcus aureus, Klebsiella pneumoniae, Streptococcus pneumoniae, Acinetobacter baumannii and Pseudomonas aeruginosa[3]. For common bacterial infections, including urinary tract infections, sepsis, sexually transmitted infections and some forms of diarrhoea, high rates of resistance against antibiotics frequently used to treat these infections have been observed worldwide, indicating that we are running out of effective antimicrobials. For example, the rate of resistance of Escherichia coli and Klebsiella pneumoniae to ciprofloxacin, an antibiotic commonly used to treat urinary tract infections, varied from 8.4% to 92.9% and from 4.1% to 79.4% respectively in countries reporting to the Global Antimicrobial Resistance and Use Surveillance System (GLASS). Colistin is the only last resort treatment for life-threatening infections caused by carbapenems resistant Enterobacteriaceae (i.e E. coli, Klebsiella etc.). Bacteria resistant to colistin have also been detected in several countries and regions, causing infections for which there is no effective antibiotic treatment at present. Resistance to first-line drugs to treat infections caused by Staphylococcus aureus a common cause of severe infections in health facilities and the community is widespread, with a mortality rate of 64% being reported among people with Methicillin-Resistant Staphylococcus Aureus (MRSA).

In 2019, 25 countries, territories and areas provided data to GLASS on bloodstream infections due to MRSA and 49 countries provided data on bloodstream infections due to E. coli. While the data are still not nationally representative, the median rate observed for methicillin-resistant S. aureus was 12.11% and that for E. coli resistant to third generation cephalosporins was 36.0%.[4] In low-income and high-income settings, antibiotic overuse and misuse are crucial drivers of AMR, although intervention targets differ depending on income status. In LMIC, the lack of laboratory infrastructure prevents the rapid release of test results and any subsequent narrowing, or de-escalation, of therapy. Additionally, access to first-line therapy is limited, and the use of counterfeit antibiotics is rampant.[3] A 2022 point-prevalence study from Ethiopia examining the burden of enteric pathogens in diarrheic patients demonstrated a pooled prevalence for multidrug-resistant enteric organisms of nearly 71%, highlighting the need for both infection control initiatives and rapid diagnostics for diarrheal disease.[5] In other parts of the world, antibiotic overuse is predominant and dynamic stewardship programs are needed in inpatient and outpatient settings to optimize antimicrobial use.

AMR Situation in Human Health in Bangladesh

AMR is increasing over the years in Bangladesh owing to its poor healthcare standards, along with the misuse and overuse of antimicrobials which poses a regional and global threat. The magnitude of AMR infection among humans is high which has been observed in several studies during 2017 to 2020.[6] Another contributing factor is thought to be aggressive and unethical marketing practices of pharmaceutical companies, and a regulatory regime that has insufficient human, technical and logistic capacity to oversee this vast market.

Antibiotic Prescribing Pattern in Bangladesh

Several small-scale studies reported on antimicrobial prescribing and its use, varying by factors such as age and sex. For example, children (66%) were prescribed more antimicrobials than adults (44%) and the rate of prescribing antimicrobials was higher at the extremes of ages, and for males.[7,8] Third generation antimicrobials (e.g ceftriaxone and ciprofloxacin etc) were prescribed quite frequently especially by the

physician's.[9] Studies revealed that two or more antimicrobials were commonly prescribed at a time in Bangladesh and more antimicrobials were prescribed in hospital settings compared to community settings.[7-10] Prescribing antibiotics without laboratory sensitivity tests was quite common in Bangladesh due to reported lack of testing facilities.[8,9,11,12,13] A cross sectional study conducted in Inpatient Department of seven Primary Level Hospitals (PLH) and six tertiary level hospitals (TLH) of the country showed that 85.9% patients in TLHs and 100% patients in PLHs were prescribed with antibiotics at the time of admission. Only 6.4% patients of TLHs treated with antibiotic had culture proven infection and rest of the patient of TLH and all the patients of PLH were treated with antibiotic empirically.[14] Antimicrobials were commonly prescribed for fever, common cold, cough, diarrhea and Acute Respiratory Infection (ARI).[9,12]

Another worrying factor is Hospital Acquired Infections (HAI). As previously mentioned, in AMR 75% of burden is hospital acquired. We know that IPC (Infection, Prevention and Control) program is a systemic, defined way to prevent HAIs and AMR and prepare, manage and prevent infectious disease outbreaks. IPC needs to be addressed, supervised and monitored with the fullest importance. It not only ensures safety and quality of care for patients, but also protects health workers from being harmed by avoidable infections. Within the health system of Bangladesh, infection control is not a well-recognized discipline. It is in dire situation. Some private hospitals in Dhaka have initiated basic infection control measures, but the overwhelming majority of both government and private hospitals are not even aware of the existence of such measures.[15] Overcrowding, inadequate and unsanitary facilities, lack of routine cleaning and basic infection control measures (e.g lack of hand hygiene practices, coughing etiquette and disinfecting medical equipment before/after use) and improper waste management may combine to create opportunities for transmission of infection in the observed hospital wards. This type of environment poses a threat of infection, particularly through contact with contaminated hands, objects or surfaces, to all individuals in the wards, including patients, family caregivers, visitors and hospital staff.[16]

Non-Compliance and Self-Treatment

Patients' non-compliance with scheduled dosage and consequently facilitating the emergence of AMR, was a common phenomenon found in the literature reviewed.[12,17,18,19] This may be as high as 50% patients used to stop taking antimicrobials as soon as the symptoms alleviated.[11] When prescribed antimicrobials did not work in the short-term, patients usually considered the doctors as incompetent.[18.19] The prevalence of self-treatment patients was found to be quite high.[19,20] It was found to be common for illnesses such as dysentery, diarrhea and food poisoning (36%) cold, cough and fever (28%) and presumed infection of some sort (13%).[21] Reasons behind this self-treatment practice included advice from traditional healers (41%) prior experience with the particular antibiotic for the particular illness (33%) knowledge about antibiotics (17.5%) and waving doctors' consultation fees (1%). Moreover, unavailability of qualified doctors and easy accessibility of antibiotics as Over The Counter drugs (OTC) make it more complicated.

AMR Pattern in Human Health

In an AMR surveillance study, the Antimicrobial Susceptibility Testing (AST) result of E. coli showed highest resistance (60%) to ciprofloxacin, ceftazidime, ceftriaxone while low resistance (10%) to amikacin and imipenem. Consecutively, the susceptibility pattern of S. aureus showed highest resistance to ceftazidime (70%) followed by cloxacillin (60%) ceftriaxone (65%) whilst very low resistance (5%) to amikacin and vancomycin. Successively, the AST result of Pseudomonas revealed highest resistance (50%) to netilmicin, ciprofloxacin, moderate resistance (30%) to ceftazidime and ceftriaxone while lowest resistance (5%) to imipenem. Similarly, the sensitivity of Klebsiella showed higher resistance (40%) to ceftriaxone, ciprofloxacin and medium resistance (20%) to amikacin, imipenem.[22] In a 3-year study at Dhaka city, it is shown that, the resistance pattern of meropenem, amikacin, ceftazidime and cefepime fluctuated for E. coli, Klebsiella pneumonia, Acinetobacter baumannii and Pseudomonas aeruginosa from year-to-year and the overall sensitivity reducing trend was observed among those Gram Negative Bacteria to the selected potential antibiotics.[23]

AWaRe Classification of Antibiotics

The WHO AWaRe Classification Database was developed on 1st October 2019 according to the recommendation of the WHO Expert Committee on Selection and Use of Essential Medicines. It includes details of 180 antibiotics classified as Access (A) Watch (Wa) or Reserve (Re) their pharmacological

classes, Anatomical Therapeutic Chemical (ATC) codes and WHO Essential Medicines List status. It is intended to be used as a uniform and interactive tool for countries to better support antibiotic monitoring and optimal use.[24]

Improving use of antibiotics through antibiotic stewardship is one of the key interventions necessary to curb the further emergence and spread of Antimicrobial Resistance (AMR). It is also important for ensuring appropriate treatment.

For that reason, WHO in 2017 introduced the Access, Watch, Reserve ("AWaRe") classification of antibiotics in its Essential Medicines List. The classification is a tool for Antibiotic Stewardship (AMS) at local, national and global levels with the aim of reducing antimicrobial resistance.

Today, AMS is one of three "pillars" of an integrated approach to health systems strengthening. The other two are Infection Prevention and Control (IPC) and medicine and patient safety. When applied in conjunction with antimicrobial use surveillance, and the WHO Essential Medicines List (EML) AWaRe, AMS helps to control AMR by optimizing the use of antimicrobials. Linking all three pillars to other key components of infection management and health systems strengthening, such as AMR surveillance and adequate supply of quality assured medicines, promotes equitable and quality health care towards the goal of achieving universal health coverage.[25]

Antimicrobial Stewardship (AMS)

AMS refers to coordinated efforts and activities that seek to measure and improve the use of antimicrobials. In clinical practice, it entails provision of "the right antimicrobial, for the right indication (Right diagnosis) the right patient, at the right time, with the right dose and route, causing the least harm to the individual patient and to future patients".[26] It is the systematic effort to educate and persuade prescribers of antimicrobials to follow evidence-based prescribing, in order to stem antimicrobial over use and thus antimicrobial resistance.

Goals of Antimicrobial Stewardship

Antimicrobial stewardship is a coordinated program that

- Promotes the appropriate use of antimicrobials (Including antibiotics)
- Decreases the spread of infections caused by multidrug-resistant organisms.
- Reduce treatment cost
- Improves patient outcomes by reducing infection rates (Including surgical site infections) and reducing morbidity and mortality
- Improves patient safety and minimizing unintended consequences of antimicrobial use, such as readmissions and adverse drug reactions
- Reduces antimicrobial resistance through prudent use of antimicrobials.[27]

There is mounting evidence that implementation of AMS programs is a promising strategy to address appropriate use of antimicrobials and AMR. AMS programs have been shown to reduce morbidity, mortality and health care costs associated with infections. These cost saving studies have been used to validate further investment into stewardship infrastructure and expansion. More recent studies have been published that have mirrored this cost saving impact.[25] Identifying national, county, and health facility data on the clinical and economic outcomes of the successful implementation of AMS programs can serve as a standardized metric for measuring success after implementation of AMS programs and interventions.

Additionally, these data can serve other purposes, such as policy making and programme planning. Minimum requirements for the program at facility level

i) A multidisciplinary AMS team Comprising a. Physician 2. Pharmacist 3. Clinical microbiologist. 4. Infection prevention and control officer.

ii) Institutional guidelines for common infection syndromes.

iii) Additional interventions to improve the use of antimicrobials.

iv) Processes to measure and monitor antimicrobial use.

v) Periodic distribution of a facility-specific Antibiogram.

Key Steps Implementation of AMSP

i) Administrative support
ii) Formulating AMS team
iii) Infrastructural support
iv) Framing antimicrobial policy/ guideline
v) Implementing AMS strategy
vi) Education and training
vii) Monitoring compliance of AMSP.

Every hospital must have their own antimicrobial policy which may be pocket hand book or an App comprising syndrome based choice of antimicrobials

including dose and duration. Should be prepared by AMS team after discussion with all the clinicians, microbiologists and administrators. It must be compliant to the standard national and international guideline and local Antibiogram. Consensus among all clinicians must be arrived before making a policy.

Implementing AMS Strategy

Two types of strategies i) Front end strategies based on formulary restriction ii) Back end strategies – based on prospective audit and feedback. Front end strategies classifies into Restricted- Colistin, Tigecycline, Carbapenem Pharmacy require prior approval from AMS for > 1 day supply. Semirestricted- Teicoplanin, Linezolid, Vancomycin, Daptomycin- Pharmacy require prior approval from AMS for > 3 day supply. Non-restricted – 1st, 2nd Cephalosporin, Cotrim, Azithromycin, Fluroquinolone etc for which pharmacy does not require prior approval from AMS team. Back end strategies - though difficult to perform, but it is most effective strategy to implement AMSP. It has several advantages, widely practiced and easily accepted by the clinicians. It Provides higher opportunity for education and training. Impact is delayed but sustained.[23]

Diagnostic Stewardship

Diagnostic stewardship is an integral part of antibiotic stewardship programs and is also essential for infection prevention and control activities in health-care facilities. It is defined as "coordinated guidance and interventions to improve appropriate use of microbiological diagnostics to guide therapeutic decisions. It should promote appropriate, timely diagnostic testing, including specimen collection, and pathogen identification and accurate, timely reporting of results to guide patient treatment."Speed of diagnostic testing is also a key factor in effective antimicrobial stewardship. Key goals of antimicrobial stewardship can be achieved through faster and more accurate diagnostic testing, reducing time to appropriate antibiotics, reducing unnecessary use of antibiotics, and informing decisions regarding antibiotic de-escalation or discontinuation. Rapid diagnostic tests for distinguishing between viral and bacterial infection greatly facilitate the decision of whether or not to prescribe antibiotics. With the advent of new rapid diagnostics, time frame can be reduced dramatically. The reliable Point Of Care Test (POCTs) with rapid diagnostic technique promotes rapid identification of resistant infections. Rapid diagnostic tests are "game changing" for patient care, provide new opportunity for stewardship program and enhance function of microbiology laboratories. Traditional microbiological methods remain sub optimal in providing rapid identification and susceptibility testing. The need for rapid result is evident and current rapid molecular identification methods can provide results within minutes to few hours.[28,29]

CONCLUSION

AMR is a global crisis with an impact that is rapidly outpacing recent predictions. The fight against AMR is bringing the world together. This problem of AMR is multi-sectorial, multi-disciplinary and multiinstitutional and thus need a coordinated response of the three sectors, adopting a comprehensive approach such as that of One Health. The One Health approach brings together multiple sectors and stakeholders engaged in human, terrestrial and aquatic animal and plant health, food and feed production and the environment to communicate and work together in the design and implementation of programs, policies, legislation and research to attain better public health outcomes. Improving awareness of the AMR problem among professionals and practitioners across the sectors, high level political commitment, intra and inter-ministerial coordination among relevant sectors, and enforcement of regulatory regime are urgently needed to combat AMR.

DISCLOSURE

The authors declared no conflicts of interest.

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Original Article

Marine City Medical College Journal

Causes of Patient Delay in Presentation of Carcinoma Breastcancer and Its Effects on Management Outcome

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ABSTRACT

Background: According to worldwide statistics, breast cancer is the leading cause of cancer-related deaths among women. Moreover, rising nations were responsible for more than half of all fatalities. Although breast cancer incidence is lower in developing nations than in developed nations, the rate of increase is alarming. This study aimed to identify the causes of delay in presentation and their consequences on management outcomes.

Materials and methods: This was a prospective longitudinal observational study carried out at Chittagong Medical College and Hospital Lancet Diagnostic Centre from November 2019 to December 2020.

Results: After triple assessment, 51 (46%) of the patients involved in this study were diagnosed with cancer. Among the breast cancer patients, 16 (31.7%) were between 36 to 45 years, and 3 (5.88%) patients were between 16 to 25 years. Among carcinoma, 25 (49.01%) were diagnosed at stage III B, and 7 (13.73%) patients have diagnosed with stage IV. The majority of 36 (70.58%) of the patients underwent a mastectomy, 32 (62.74%) took adjuvant therapy, and 7 (13.73%) patients were given neoadjuvant therapy. 11(21.5%) patients disagreed with continuing treatment, and 49 (96.08%) patients had irregular follow-ups. Regarding causes of late coming were ignorance (32,63%) negligence (35,66%) less family support (12, 24%) husbands dead or were staying abroad (17, 33%) taking kabiraji / homeopathy (33,67%) inappropriate referral system (24, 47%) cancer phobia (27, 53%) economic problems (32,63%) shyness to consult a male doctor (11, 22%).

Conclusion: This study can provide light on the leading causes of delay in seeking treatment, as well as the adverse outcomes associated with late-stage breast cancer diagnoses. Cancer of the breast imposes not only a financial strain on a family, but also a psychological breakdown on its members. As women's health is a major concern for an economically developing nation like Bangladesh, this study could aid our government and non-government health sectors in taking the appropriate steps.

Key words: Breast cancer; Outcome; Management; Reproductive health.

INTRODUCTION

Breast cancer is the most common kind of cancer among women. In wealthy nations, this risk has increased by 1% to 2% every year over the past several decades, whereas data for underdeveloped nations is sparse. Researchers believe that variables such as late childbearing, oral contraceptives, socioeconomic conditions, and nutritional changes contribute to the higher risk in emerging nations.

A 2020 WHO study found 2,088,849 new breast cancer cases and 627,000 deaths in 2018.[1] Breast cancer kills most women worldwide.[2] 55% of these deaths occurred in low- to middleincome countries.[3] GLOBOCAN reported 52.9% of 1.67 million new breast cancer cases in industrialized nations in 2012, up from 35% in 1980.[4] Among 2010, nearly half of developing country breast cancer cases were in women of reproductive age (15–49 years).[4] A Harvard School of Public Health study predicts 1.35 million breast cancer diagnoses worldwide in 2009, 10.5% of all new malignancies. By 2020, breast cancer rates will grow 26%, mostly in emerging nations.[5] Developing nations killed 62% of breast cancer victims in 2012.[2]

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Breast cancer is spreading rapidly in South Asia, where 588 million women are over 15.[6] South Asian countries lack national cancer registries. In 2012, South Asia had over 200,000 breast cancer cases and 97,500 deaths.[2] Breast cancer now outnumbers cervical cancer in South Asian women.[7] Due to longer lifespans, better infectious disease treatment, and greater westernization, breast cancer rates in developing nations are expected to climb.[8]

Bangladesh lacks breast cancer data. No substantial efforts have been made to develop a population-based cancer registry to collect nationwide data. The only hospital-based cancer registry in Bangladesh detects new breast cancer cases. NICRH reported 5255 breast cancer cases between 2005 and 2010. Nearly 56% of patients were reproductive-age (15-44 years).[9,10]

Bangladesh does not register breast cancer fatalities or provide hospital follow-up. Breast cancer death and survival rates are unknowable. However, GLOBOCAN reported 7142 Bangladeshi breast cancer deaths.[2] A maternal health study found 21% of women's mortality in the childbearing age group, while autopsy studies found 62% of breast cancer deaths among women under 50.[11,12]

According to the study, 50% of breast cancer diagnoses in Bangladesh are premenopausal, which may be related to the population being much younger than in industrialized nations and missing the older group owing to shyness in seeking treatment and lesser treatment value compared to younger family members. These young ladies are premenopausal and have young children who depend on their mothers. Most of our cases are stage III or IV due to superstitions, lack of awareness, low socioeconomic status, low levels of education, misconceptions, inadequate access to medical care and an ineffective referral system, having a baby during lactation, etc. Breast cancer survival has increased considerably over the past 30 years due to diagnosis and multidisciplinary treatment. Due to its five-year survival rate, Breast Conserving Surgery (BCS) is becoming more popular.

Breast-Conserving Surgery reduces psychological anguish from losing breasts (BCS). But only early on. Lowering breast cancer mortality requires early case diagnosis. Unfortunately, women in low-resource countries like Bangladesh present with diseases at later stages. Patients and relatives suffer greatly. We should identify the reasons people delay seeing specialists to raise awareness of breast cancer early detection. Our study investigated the late onset of breast cancer in Bangladesh and raised awareness of physical, mental, and economic issues. It will also raise awareness of early reporting, surgery specialist treatment, and breast cancer screening. This study assesses the consequences of delay in management results and helps our government develop breast cancer primary preventive measures.

MATERIALS AND METHODS

This prospective longitudinal observational study was carried out in a government and private healthcare facility in the Surgery Department of Chittagong Medical College Hospital, Chattogram and Lancet Diagnostic and Research Centre, Chattogram, from November 2019 to December 2020. A total of 112 patients were selected, 51 patients were included in this study who had been diagnosed with breast cancer at stages II, III, and IV after performing the triple assessment. Necessary permission was taken before commence the study.

RESULTS

A total of 112 patients with breast lumps were included in this study. Table I shows 61(54%) patients present benign tumors, while 51(46%) present carcinoma. Among the cancer patients, 1(2%) were male and 50(98%) were female. There were benign breast tumors in 2 (3%) of the men and 59 (97%) of the women patients. The male and female ratio in carcinoma is 1: 50, and in benign tumors, 2:59.

Table II shows that among the patients with breast carcinoma, 16(31.37%) were between 36 to 45 years old, followed by 12 (23.52%) between 26 to 35 years and 12(23.52%) between 46-55 years old. Unfortunately, 03(5.88%) were between 16 to 25 years which is alarming.

According to the site, 29(56.86%) patients present with lumps affecting the whole breast or more than one quadrant; most patients came at late stages. Fourteen (27.45%) patients came with lumps at the lateral quadrant, followed by 6(11.76%) patients with medial quadrants and 2(3.92%) patients with the central region.

Figure I shows different clinical stages at presentation. Among 51 cancer patients, 25 (49.01%) present at stage III B, which means locally advanced cases, 12(23.53%) with IIIA, 7(13.73%) at stage IV, followed by 5(9.08%) at stage IIB.

Table III represents treatment with its outcome. Thirty-six (70.58%) underwent a mastectomy, with 32 (62.74%) patients taking adjuvant therapy, 7(13.73%) patients having neoadjuvant chemotherapy, 1(1.96%) had amputation of the upper limb with muscle flap,1(1.96%) had a lumpectomy. Unfortunately, 11(21.5%) patients disaggregated to continue treatment. Only 2(3.92%) patients had a history of regular check-ups, and 49(96.08%) had irregular or no followups.

Table IV shows the leading causes of late coming. Thirty-two (63%) patients mentioned that the reason was ignorance, 35(66%) negligence, 12(24%) less family support, 17(33%) husbands died or stayed abroad, 3(6%) had a child below two years, 33(67%) had a history of taking kabiraji/homeopathy, 11(22%) had a history of shyness to consult a male doctor, 5(6%) gave an account of religious barrier, 24(47%) had a history of the inappropriate referring system, 27(53%) had a history of cancer phobia, 32(63%) had economic problems.

Table I Incidence of benign and malignant cases (n=112)

Disease	No of patients n =112 (%)	No male patients	(M) No female patients	(F) Male: Female
Carcinoma	51 (46%)	1 (2%)	50 (98%)	1:50
Benign Tumor	61 (54%)	2 (3%)	59 (97%)	2:59

Table II Age of incidence and affected quadrants during the presentation (n= 51)

Item	No of the patients (n=51)	Percentages of patients (%)
Age of Incidence		
0-15 years	0	0%
16-25 years	03	5.88%
26-35 years	12	23.52%
36-45 years	16	31.37%
46-55 years	12	23.52%
56-65 years	03	5.88%
The affected breast during the presentation (n= 51)		
Right breast	24	47.05%
Left breast	26	50.98%
Both breast	1	1.96
Incidence of affected Quadrants during the presentation		
Lateral	14	27.45%
Medial	6	11.76%
Central	2	3.92%
Whole/more than one quadrant	29	56.86%

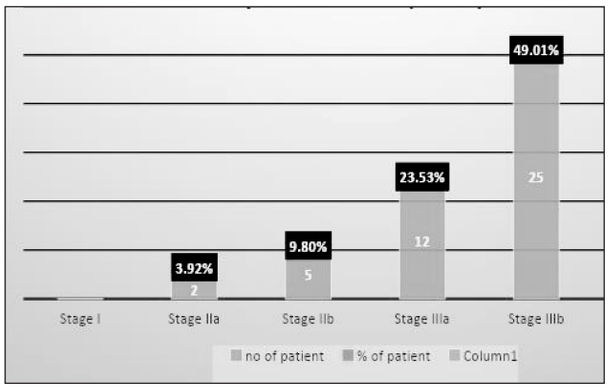

Figure 1 Different clinical stages at presentation (n=51)

Table III Treatment is given/recommended and incidence of postoperative follow-up (n= 51)

Item	No of the patients (n=51)	Percentages (%)
Treatment given		
Mastectomy	36	70.58%
Adjuvant chemotherapy/radiotherapy	32	62.74%
Neoadjuvant chemotherapy	07	13.73%
Lumpectomy	01	1.96%
Amputation of the upper limb with muscle flap	01	1.96%
Disagreed to continue treatment	11	21.57%
Follow-up		
Regular	02	3.92%
Irregular/not done	49	96.08%

Table IV Causes of the late coming of patients with advanced stages of breast cancer (n=51)

Causes	No of patients n=51 (%)
I. Ignorance	Yes=32 (63%)
	No=19 (37%)
II. Negligence	Yes=35 (66%)
	No=16 (34%)
III . less family support	Yes=12 (24 %)
	No=39 (76%)
IV. Husband abroad/died	Yes=17 (33%)
	No=33 (67%)
V. Young children (below 2 years)	Yes=3 (6%)
	No=46 (94%)
VI. Treating kabiraji/homeopathy	Yes=33 (67%)
	No=18 (33%)

Causes	No of patients n=51 (%)
VII. Shyness to consult a male doctor	Yes=11 (22%)
	No=40 (88%)
VIII. Religious barrier	Yes=5 (6%)
	No=46 (94%)
1X Referral	Yes=24 (47%)
	No=27 (53%)
X. Phobia	Yes=27 (53%)
	No=24 (47%)
XI. Economic problem	Yes=32 (63%)
	No=19 (37%)

DISCUSSION

The frighteningly high incidence of breast cancer is the most significant concern due to its high fatality rate, although early detection can result in a patient's complete recovery. The leading cause is a lack of resources for frequent mammography screening and a lack of knowledge about breast cancer. In 2020, a projected 2.3 million new cases constituted 11.7% of total cancer cases, with over 685,000 fatalities.[13] Breast cancer is often identified at late stages in low and middleincome nations, with only 20-60% of patients diagnosed at early stages.[14,15,16] Furthermore, advanced-stage diagnosis is connected with shorter survival times and higher fatality rates.[15,17] These are why death rates in developing nations are substantially higher, and survival rates are lower compared to rates in developed countries.[18,19,20] This study revealed that amongst 112 patients who came with breast lumps, 51(46%) were diagnosed with breast cancer after triple assessment, whereas 61(54%) were benign tumors. Out of these patients, one was a male patient. A study by Jamilia Ali et al. regarding the rate of breast cancer showed that 26.9% presented with palpable breast lumps.[21] This difference may be because our study was conducted in a tertiary hospital and a surgery specialist's private chamber. So the maximum was referred patients, especially those with breast cancer. It may be the reason for our study's high rate of breast cancer.

1% of all breast cancer detected in the USA are men. In 2019, about 2700 men were projected to develop breast cancer related to 270,000 American women (American Cancer Society).[22] In our study, we found one male patient with breast cancer and the ratio with females was 2: 100. This study showed that the highest incidence of breast cancer was in between 36 to 45 years (31.37%), followed by 26 to 35 years and 46 to 55 years, 23.52% each. Our mean age is 46.57 years. A study regarding the incidence of breast cancer among Yemeni female patients with palpable breast lumps shows that 51.3% were in the age group 31 to 45 years, along with mean age of 44.3 years.[21]

Regarding the affected side, 24(47.05%) patients came with right breast cancer, 26 (50.98%) with Left breast cancer, and 1(1.96%) had carcinoma of both breasts. According to Alsanabani JA study, 47.20% of females presented with right breast lumps, 46.40% with left breast lumps and 6.40% with both breast lumps, almost similar to this study.[21]

This study showed that 14(27.45%) patients came with lumps at lateral parts of the breast, which means upper outer and upper inner quadrants, while 6(11.76%) came with lumps at the medial aspect of the breast means upper medial and lower medial aspects. Unfortunately, 29(56.86%) patients had lumps in the entire breast. A study regarding quantitative mammographic mass and breast cancer in various quadrants of the breast shows ca breast occurred in 60.9% in UO (Upper outer), 14.5% in UI (Upper inner) 6.4% in LO (lower outer),18.2% in LI (Lower Inner) quadrants. This dissimilarity may be because the current study includes patients in a tertiary hospital and private chamber, where patients mainly came by referral from the periphery at advanced stages.[23]

Our study showed the highest number of patients came at stage III B, 25 (49.01%), which means locally advanced cases, followed by 12(23.53%) at stage IIIA and 7(13.73%) at stage IV. Unfortunately, no patient came at stage I, whereas 2(3.92%) patients came at stage IIA, and 5 (9.80%) at stage IIB. A study regarding factors associated with advanced breast cancer also showed that about 40.2% of patients came at stage IV, followed by 27.9% at stage IIIA, and 25.5% at stage IIIB.[24] That means most cases in developing countries came at the late stages of the disease.

The current study explored that 36(70.58%) patients underwent a mastectomy, seven (13.73%) patients got neoadjuvant chemotherapy and 1 (1.96%) patient underwent amputation of the upper limb with muscle flap. Unfortunately, 11(21.57%) patients disagreed with continuing treatment. On the contrary, only 1 (1.96%) patient underwent a lumpectomy, as most patients came at their advanced stage. A study regarding mastectomy to breast-conserving therapy for early breast cancer found that the BCT (Breast Conserving Therapy) had a 3.2% and 8.2% local recurrence after 5 years and 10

years, respectively. In contrast, the mastectomy group had a significantly higher failure rate, with a 5.0% recurrence after 5 years and a 12.6% recurrence after 10 years. It might be due to the advanced stages of the patients who underwent a mastectomy.[25] This study also showed that about 49(96.08%) patients were irregular in regular follow-ups, which may be due to the economic burden.

The most important findings of this study were the causes of delay. There were more than one cause for the delay of a single patient. The significant causes were 35(66%) patients neglect the disease, 17(33%) had a history of divorce or husband abroad, 33(67%) went to Kabiraji/homeopath doctors, 24 (47%) patients had a history of inappropriate referring, 27(53%)patients came late due to their phobia to cancer, 3263%) had a history of economic problems. A study regarding factors associated with delay in breast cancer showed 23.6% were widowed, 91.3% were not aware of this disease, 43.7% at first visited the traditional healer, 39.8% had economic problems, 31.1% had a history of inappropriate referring.[24]

As the average age and death rate is significantly increasing day by day in Bangladesh, it is high time to seek out the causes of late coming and should take measures accordingly.

LIMITATIONS

This study was limited to the Chattogram and Chattogram hill tracts division. Therefore, it could not accurately depict the country. In addition, the study was conducted in a tertiary hospital and a private surgical specialist chamber; the majority of patients had cases referred to them, and nearly all were in their final phases. Therefore, the real rate of breast cancer could not be determined from this study.

CONCLUSION

This study can provide light on the leading causes of delay in seeking treatment, as well as the adverse outcomes associated with late-stage breast cancer diagnoses. Cancer of the breast imposes not only a financial strain on a family, but also a psychological breakdown on its members. As women's health is a major concern for an economically developing nation like Bangladesh, this study could aid our government and non-government health sectors in taking the appropriate steps.

RECOMMENDATIONS

As the breast cancer rate and death rate increase considerably, the average age is decreasing, which means that when a woman dies from this disease, she leaves her young children in this mortal world. This is not only a psychological shock for kids, but it is also detrimental to their future. Therefore, the government and non-government sectors should adopt certain measures for the welfare of our future generation. The subsequent actions may be taken:

All family planning field workers should be informed of the signs and symptoms of breast cancer; throughout Asia, the majority of village and slum women are always open to sharing their issues with these field workers.

Women, particularly in rural and impoverished regions, should get regular training on the necessity of self-breast inspection. Non-governmental organizations may contribute to this sector.

Initially, appropriate referral should be ensured, particularly in primary healthcare. Screening procedures, particularly mammograms, should be accessible throughout the whole healthcare system. Our general people should be adequately and frequently informed about the economic, mental and physical advantages of early arrival.

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AUTHORS CONTRIBUTION

SS-Conception, acquisition of data, drafting & final approval.

MNI-Design, critical revision & final approval.

MU-Data analysis, acquisition of data, drafting & final approval.

IH-Acquisition of data, data analysis, drafting & final approval.

JF-Interpretation of data, critical revision & final approval.

DISCLOSURE

The authors declared no conflicts of interest.

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Original Article

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Calorie Intake and Nutritional Status of Rural Elderly Population of Chattogram District

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ABSTRACT

Background: Bangladesh like many other countries around the world is experiencing population aging. Information on the calorie intake and nutritional status of older persons in low to middle-income countries such as Bangladesh are scarce and not well documented. Research and public health activities in Bangladesh have so far focused largely on nutritional aspects related to children and women of reproductive age. This study aimed to assess the nutritional status and calorie intake pattern of the elderly who resides in rural areas of Bangladesh.

Materials and methods: This community-based cross-sectional study was conducted from July 2019 to July 2020 among 400 people aged 65 years and above, residing in the Chattogram district of Bangladesh.The participants' mean age was 70.6±6.1 years and 64% were female.

Results: The nutritional assessment showed 38.3% to be having normal nutrition, 47.0% at risk of malnutrition, and 14.7% malnourished. Caloric intake was less than the RDA in 89.1%. A significantly higher odds of having malnutrition was observed among the respondents aged 70-79 years (OR:3.63, 95% CI: 1.27-9.15) and 80 years and above (OR:9.12, 95% CI: 2.12-15.81) living in a nuclear family (OR:5.15, 95% CI: 1.83-16.59) from upper lower (OR: 4.88: 95% CI: 1.11-8.35) or lower socio-economic class (OR:5.0; 95% CI: 1.05-11.54 and with deficient calorie intake (OR:4.11, 95% CI: 1.03-16.38) than the respondents aged 60-69 years, living in a joint family, upper and upper-middle socioeconomic class, and with adequate calorie intake respectively.

Conclusion: Prevalence of elderly individuals who were at risk of malnutrition was high in this study and more than half of the older population were malnourished or at risk of malnutrition. Therefore, considering the high prevalence of poor nutritional status among the elderly, more focus on diet and possible nutritional interventions are required.

Key words: Calorie intake; Elderly people; Malnutrition; Nutritional status; Rural people.

INTRODUCTION

The world population is now experiencing population aging as evidenced by the much more rapid growth of the sector of people 65 years or older compared to that of the general population. The share of older persons in the global population is expected to increase from 9.3%in 2020 to 16.0% in 2050. By mid-century, one in six people globally will be aged 60 years or older.[1] Projections based on the assumption that the current demographic trends will continue to indicate that the 21st century will be the "Century of the Old" in Bangladesh, which will be paralleled in populations around the world. As of 2019, over 13 million people living in Bangladesh are aged over 60 which was 8% of the country's total population. The proportion of older people is expected to double to 21.9% in 2050 with 36 million people aged over 60. This means that for every five Bangladeshis, one will be a senior citizen.[2]

A person's nutritional status can be affected by physiological, psychological, economic, and social factors during aging. Such malnutrition can be accompanied by disease and weakness. The elderly may have nutritional problems and can become predisposed to the risk of malnutrition.[3] In older adults, malnutrition is a multifactorial condition. An analysis of a systematic review suggests that demographics,

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finance, food access, appetite status, lifestyle, psychological characteristics, physical functioning, disease, oral health, and social factors can affect malnutrition.[4] Decades ago in a study from Bangladesh, the risk of malnutrition was 62% and the rate of malnutrition was 26% among community-dwelling elderly people in a rural area in Bangladesh.[5] Malnutrition in residential areas is often associated with cognitive impairment, hypotension, infection, and anemia, and it may result in the deterioration of physical activities in daily life, such as dressing and washing. In hospitals, the risk of malnutrition may increase due to prolongation of hospital stay, increased morbidity, fractures, infection, and specific nutritional deficiencies, and may result in mortality.[6] In an earlier study conducted in rural Bangladesh, the prevalence of Chronic Energy Deficiency (CED) was 26% and 57% of the rural elderly were at risk of CED.[7]

In rural areas, older people have difficulty accessing health services and their health status is poor.People in rural areas of Bangladesh have different living conditions, may have different views of their health in everyday life from urban people.[8] There is evidence that people living in rural areas have different healthcare needs from those living in urban areas and rural areas are often underserved by healthcare services. Various factors contribute to these differences of people living in urban and rural areas, including geography, demographics, socioeconomics, workplace, personal health. Furthermore, rural residents tend to be poorer socioeconomically, have less education, smoke more and drink more, and have higher mortality rates than urban residents.[9]

It was expected that the study would further bridge the information gap and promote the care of the aged population. ESPEN (European Society for Clinical Nutrition and Metabolism) published nutrition screening guidelines in 2003. The guidelines recommend the Mini Nutritional Assessment (MNA) tool for older persons.[10]

This study aimed to assess the calorie intake and nutritional status of older adults in a rural community in Chattogram District of Bangladesh.

MATERIALS AND METHODS

This community-based cross-sectional study was conducted among 400 people aged 65 years and above, residing in the Chattogram district of Bangladesh with a time period of one year from July 2019 to July 2020. Multistage sampling method was followed to collect the sample. For convenience Chattogram district was selected purposively from the south-east region of Bangladesh. A kish grid was used for randomly choosing household survey respondents to assess their calorie intake and nutritional status. This method was applied to avoid selection bias. A kish grid has a column for each household and a row for the numbers ofeligible people. Prior approval was taken from the Ethical Review Committee of Chittagong Medical College, voluntary consent was taken before collecting data. when participant cannot give consent due to cognitive impairment it was taken from his close relatives. Seriously ill, malignant person, non-ambulant person are excluded. Rural people meant in this study are those who live in a village of Bangladesh for at least more than one year. Data were collected by face-to-face interviews of the respondents with the help of a research assistant. Assessment tool short form (MNA-SF) was used to classify the respondents as having 'normal nutrition' (Score 12 and above) at risk of malnutrition (8-11) 'malnourished' (Score less than 8). A 24-hour dietary recall was done to calculate per day calorie intake and compare with Recommended Daily Allowance (RDA). The results were interpreted as adequate or deficient. After collection data were entered into a Microsoft Xcel datasheet to produce a master sheet. Then they were fed into SPSS (Statistical Package for Social Science) for Windows version 23 software for the processing and analyses. Chi-square tests were used to assess bivariate associations between categorical variables and the Mann-Whitney U test to assess the significant difference between two median values. Binary logistic regression analysis was performed to identify independent variables associated with malnutrition, odds ratios with 95% confidence intervals were calculated. Statistical significance was defined as $p < 0.05$.

RESULTS

Age range between 65 to 90 years with a mean age of 70.6±6.1 years in the current study. Table I shows that the majority (54.5%) of the participants were in the 65-69 years age group and only 10.3% were 80 years or above. There was female predominance with a female to male ratio of 1.8:1. The majority of the participants (88.8%) were Muslims. About one-third (32.5%) of them were living without a partner (divorced, widowed, or died). About 39% fell in the lower middle class followed by 29.8% in the upper middle and 20.8% in the upper-lower socio-economic class. More than one-

third (35%) were engaged in vocational activities but only 3.3% were economically independent. More than half (57.2%) lived in a joint family and 63.1% had either very good or good social networks.

Though 66.8% of the participants reported not to smoke tobacco in their lifetime 11.3% was a current smoker. Only 5 (1.3%) participants reported drinking alcohol in their past (Table II).Out of 400 participants, 26% had not reported any comorbid chronic health condition. The most prevalent comorbidity was hypertension (42%) followed by diabetes mellitus (13.5%), chronic obstructive airway disease (13%), ischemic heart disease (12.5%) and peptic ulcer diseases (11%).

As per BMI criteria, the majority (36%) participants had normal body weight, followed by overweight (29.8%), obese (18.5%). However, 63 (15.8%) participants were underweight (Figure 1).

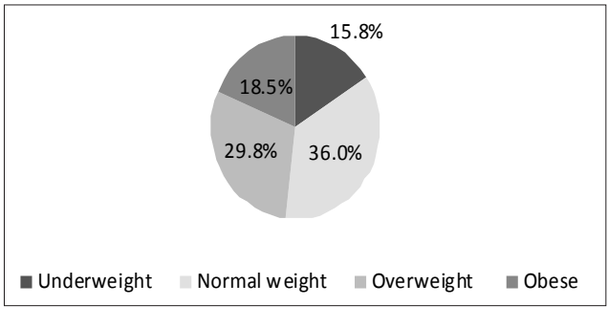

Figure 1 Distribution of respondents as per BMI category (n=400)

Overall out of 400 elderly subjects included in study 153 (38.3%) had satisfactory nutritional status, 188 (47.0%) were at risk of malnutrition and 59 (14.7%) were malnourished by MNA too (Figure 2).

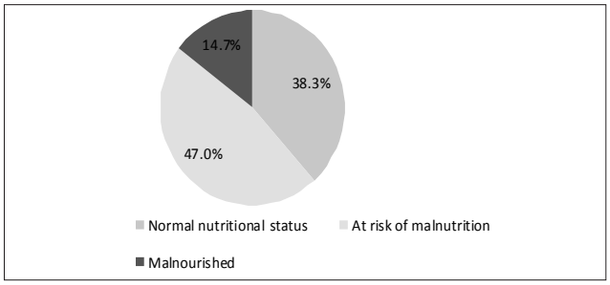

Figure 2 Distribution of respondents based on MNA score (n=400)

Median (IQR) RDA was 1875 (1823-2175) kcal but the reported median calorie intake was 1489 (1326-1680) kcal. This difference was highly significant statistically (Figure 3).

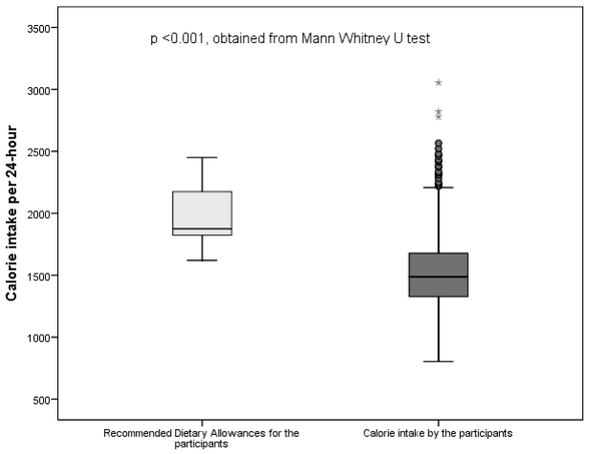

Figure 3 Comparison between RDA and actual calorie intake by the participants.

Only 19.5% of the study participants have adequate calorie intake by 24hour dietary recall and 322 (80.5%) participants' reported food intake was deficient than RDA.

A significant association was found between the nutritional status and the older age groups, living in a nuclear family, having a poor social network, being financially dependent, not engaged in any vocational activities, from a lower socioeconomic class, having no formal education, and living without a partner. No significant association was found between gender and nutritional status (Table I).

Table I Sociodemographic variables and MNA status

Variables	Normal nutrition	At risk of malnutrition	Malnourished	p value*
Age groups				
65-69 years	96 (44.0)	101 (46.3)	21 (9.6)	
70-79 years	47 (33.3)	72 (51.1)	22 (15.6)	<0.001
≥ 80 years	10 (24.4)	15 (36.6)	16 (39.0)	
Sex				
Male	53 (36.8)	66 (45.8)	25 (17.4)	0.541
Female	100 (39.1)	122 (47.7)	34 (13.3)	
Religion				
Muslims	136 (38.3)	169 (47.6)	50 (14.1)	0.550
Others	17 (37.8)	19 (42.2)	9 (20.0)	
Family type				
Nuclear	37 (21.6)	88 (51.5)	46 (26.9)	<0.001
Jointed	116 (50.7)	100 (43.7)	13 (5.7)	

Variables	Normal nutrition	At risk of malnutrition	Malnourished	p value*
Social network				
Very good	62 (47.3)	62 (47.3)	7 (5.3)	
Good	48 (39.7)	64 (52.9)	9 (7.4)	<0.001
Poor	18 (25.0)	39 (54.2)	15 (20.8)	
Very poor	25 (32.9)	23 (30.0)	28 (36.8)	
Economic dependency				
Independent	5 (38.5)	8 (61.5)	0 (0)	
Partly dependent	72 (50.0)	61 (42.4)	11 (7.6)	0.001
Dependent	76 (31.3)	119 (49.0)	48 (19.8)	
Vocation status				
Working	69 (49.3)	60 (42.9)	11 (7.9)	<0.001
Not working	84 (32.3)	128 (49.2)	48 (18.5)	
Socio-economic status				
Upper	1 (25.0)	2 (50.0)	1 (25.0)	
Upper middle	65 (54.6)	51 (42.9)	3 (2.5)	
Lower middle	60 (39.0)	86 (55.8)	8 (5.2)	<0.001
Upper lower	22 (26.5)	41 (49.4)	20 (24.1)	
Lower	5 (12.5)	8 (20.0)	27 (67.5)	
Education				
No formal education	63 (36.6)	71 (41.3)	38 (22.1)	
Class 1-V	68 (43.0)	73 (46.2)	17 (10.8)	0.001
Class VI and above	22 (31.4)	44 (62.9)	4 (5.7)	
Living without partner				
No	118 (43.7)	130 (48.1)	22 (8.1)	<0.001
yes	35 (26.9)	58 (44.6)	37 (28.5)	
Smoking habit				
Never smoke	105 (39.3)	125 (46.8)	37 (13.9)	
Ex-smoker	32 (36.4)	40 (45.5)	16 (18.2)	0.850
Current smoker	16 (35.6)	23 (51.1)	6 (13.3)	
Drinks alcohol				
Never	152 (38.5)	187 (47.3)	56 (14.2)	0.016
Ex-drinker	1 (20.0)	1 (20.0)	3 (60.0)	

Data were expressed as frequency and row wise percentage. *p values were derived from Chi-square test.

No significant association was found between smoking status and nutritional status. However, being an ex-drinker was a significant factor forbeing malnourished in the study. With regards to comorbidity, only ischemic heart disease had a significant association with nutritional status. BMI had significant association with nutritional status in the studied population. All underweight participants were either at risk of malnutrition or malnourished. Majority of the normal weight, overweight or obese participants were either had normal nutrition or at risk of malnutrition.

No significant association was found between the socio-demographic factors and 24 hours calorie intake pattern except educational status. The higher proportion of participants having education above class V were found to take adequate calories compared to the participants with no formal education or education up to class V or below (Table II).

Table II Socio-demographic variables and calorie intake status

Variables	24 hours calorie intake		
	Adequate	Deficient	p value
Age groups			
65-69 years	41 (18.8)	177 (81.2)	
70-79 years	27 (19.1)	114 (80.9)	0.704
≥80 years	10 (24.4)	31 (75.6)	
Sex			
Male	22 (15.3)	122 (84.7)	0.114
Female	56 (21.9)	200 (78.1)	
Religion			
Muslims	73 (20.6)	282 (79.4)	0.132
Others	5 (11.1)	40 (88.9)	
Family type			
Nuclear	30 (17.5)	141 (82.5)	0.394
Jointed	48 (21.0)	181 (79.0)	
Social network			
Very good	26 (19.8)	105 (80.2)	
Good	26 (21.5)	95 (78.5)	
Poor	13 (18.1)	59 (81.9)	0.876
Very poor	13 (17.1)	63 (82.9)	
Economic dependency			
Independent	3 (23.1)	10 (76.9)	
Partly dependent	29 (20.1)	115 (79.9)	0.908
Dependent	46 (18.9)	197 (81.1)	
Vocation status			
Working	27 (19.3)	113 (80.7)	0.937
Not working	51 (19.6)	209 (80.4)	
Socio-economic status			
Upper	1 (25.0)	3 (75.0)	
Upper middle	26 (21.8)	93 (78.2)	
Lower middle	34 (22.1)	120 (77.9)	0.376
Upper lower	13 (15.7)	70 (84.3)	
Lower	4 (10.0)	36 (90.0)	
Education			
No formal education	31 (18.0)	141 (82.0)	
Class 1-V	26 (16.5)	132 (83.5)	0.048
Class VI & above	21 (30.0)	49 (70.0)	
Living without partner			
No	48 (17.8)	222 (82.2)	
Yes	30 (23.1)	100 (76.9)	0.210

Data were expressed as frequency and row-wise percentage. *p values were derived from the Chi-square test.

Smoking habits and drinking habits had no association with 24 hours calorie intake patterns in the study. BMI category had no association with 24 hours calorie intake pattern in the study.

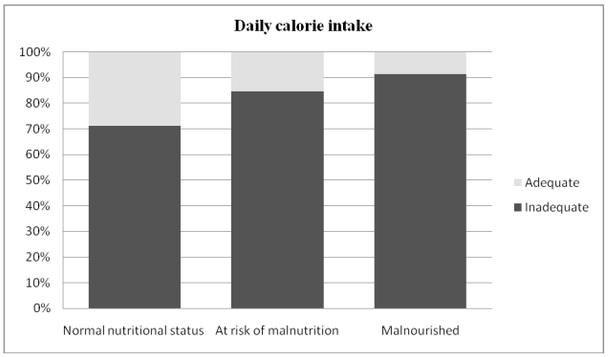

Figure 4 Relationship of nutritional status with calorie intake

Figure 4 illustrates the relationship between nutritional status and calorie intake. The majority of the participants with normal nutritional status were found to take adequate calories. In contrast, the majority of the malnourished participants were found to have deficient calorie intake. The association between nutritional status and calorie intake was statistically significant (p=0.001, obtained from Chi-square test).

Association of nutritional status with selected factors by binary logistic regression is depicted in Table III. For the regression process, the well-nourished category was taken as a reference for comparing with at risk of malnutrition group. A significantly higher odds of having at risk of malnutrition was observed among the respondents having nuclear family, no formal education and with deficient calorie intake than the respondents living in a joint family, education up to class VI and above and with adequate calorie intake respectively.

Table III Association of nutritional status (Normal nutrition versus at risk of malnutrition) with selected factors

Variables	Adjusted OR (95% CI)	p value
Ag e groups		
65-69 years	Reference	
70-79 years	1.42 (0.84-2.38)	0.191
≥80 years	1.89 (0.73-4.87)	0.184
Family type		
Joint	Reference	
Nuclear	2.72 (1.54-4.81)	0.001
Social network		
Very good	Reference	
Good	1.29 (0.72-2.85)	0.391
Poor	1.43 (0.63-3.23)	0.396
Very poor	0.53 (0.24-1.19)	0.127
Living without partner		
No	Reference	
Yes	0.98 (0.52-1.84)	0.947
Education		
Class VI and above	Reference	
Class 1-V	1.17 (0.69-2.00)	0.555
No formal education	2.83 (1.41-5.68)	0.003
Vocational status		
Working	Reference	
Not working	1.36 (0.63-2.27)	0.142
Socioeconomic class		
Upper and Upper middle	Reference	
Lower middle	1.34 (0.78-2.38)	0.279
Upper lower	1.24 (0.55-2.79)	0.604
Lower	1.37 (0.36-5.18)	0.645
Variables	Adjusted OR (95% CI)	p value
Calorie intake		
Adequate	Reference	
Deficient	2.81 (1.56-5.07)	0.001
Economic dependency		
Independent and partly dependent	Reference	
Dependent	1.21 (0.65-2.23)	0.476

Association of nutritional status with selected factors by binary logistic regression is depicted in Table IV. For the regression process, the well-nourished category was taken as a reference for comparing with the malnourished group. A significantly higher odds of having malnutrition was observed among the respondents aged 70-79 years and ≥ 80 years, living in a nuclear family, from upper lower or lower socio-economic class, and with deficient calorie intake than the respondents aged 65-69 years, living in a joint family, upper and upper-middle socioeconomic class, and with adequate calorie intake respectively.

Table IV Association of nutritional status (Normal nutrition versus malnourished) with selected factors

Variables	Adjusted OR (95% CI)	p value
Ag e groups		
65-69 years	Reference	
70-79 years	3.63 (1.27-9.15)	0.016
≥ 80 years	9.12 (2.12-15.81)	0.001

Variables	Adjusted OR (95% CI)	p value
Family type		
Joint	Reference	
Nuclear	5.15 (1.83-16.59)	0.002
Social network		
Very good	Reference	
Good	2.22 (0.48-10.29)	0.308
Poor	3.52 (0.71-17.47)	0.123
Very poor	1.98 (0.41-9.23)	0.399
Living without partner		
No	Reference	
Yes	1.03 (0.32-3.38)	0.958
Education		
Class VI and above	Reference	
Class 1-V	1.28 (0.44-3.68)	.652
No formal education	1.74 (0.29-10.14)	.539
Vocational status		
Working	Reference	
Not working	0.46 (0.10-2.06)	0.311
Socioeconomic class		
Upper and Upper middle	Reference	
Lower middle	1.34 (0.31-5.84)	.695
Upper lower	4.88 (1.11-8.35)	.035
Lower	5.06 (1.05-11.54)	.000
Calorie intake		
Adequate	Reference	
Deficient	4.11 (1.03-16.38)	0.045
Economic dependency		
Independent and partly dependent	Reference	
Dependent	1.41 (0.33-5.94)	0.644

Finally,for the regression process, the well-nourished category was taken as a reference for comparing with at risk of malnutrition and the malnourished group as a whole. The results of the binary logistic regression are depicted in Table V. A significantly higher odds of having malnutrition was observed among the respondents aged ≥ 80 years, having nuclear family, no formal education, from lower socio-economic class, and with deficient calorie intake than the respondents aged 65-69 years, living in a joint family,education up to class VI and above, upper and upper-middle socioeconomic class and with adequate calorie intake respectively.

Table V Association of nutritional status (Normal nutrition versus at risk of malnutrition/malnourished) with selected factors

Variables	Adjusted OR (95% CI)	p value
Ag e groups		
65-69 years	Reference	
70-79 years	1.51 (0.91-2.50)	0.109
≥ 80 years	2.65 (1.11-6.32)	0.028
Family type		
Joint	Reference	
Nuclear	2.91 (1.69-5.03)	<.001
Social network		
Very good	Reference	
Good	1.27 (0.72-2.24)	0.406
Poor	1.51 (0.69-3.29)	0.299
Very poor	0.71 (0.34-1.95)	0.382
Living without partner		
No	Reference	
Yes	1.06 (0.58-1.95)	0.844
Education		
Class VI and above	Reference	
Class 1-V	1.12 (0.67-1.87)	0.672
No formal education	2.58 (1.30-5.11)	0.007
Vocational status		
Working	Reference	
Not working	1.05 (0.57-1.93)	0.880
Socioeconomic class		
Upper and Upper middle	Reference	
Lower middle	1.36 (0.78-2.33)	0.271
Upper lower	1.54 (0.72-3.27)	0.266
Lower	4.49 (1.50-14.39)	0.008
Variables	Adjusted OR (95% CI)	p value
Calorie intake		
Adequate	Reference	
Deficient	3.00 (1.69-5.32)	0.000
Economic dependency		
Independent and partly dependent	Reference	
Dependent	1.22 (0.97-2.21)	0.519

DISCUSSION

Malnutrition has traditionally been considered a significant health concern primarily in low to middle-income countries.[11] Although older adults comprise a significant proportion of the population in these countries, their focus on their nutrition is often overlooked.[12] This research aimed to identify the nutritional status and calorie intake pattern of the rural older population in Bangladesh. For this purpose, 400 elderly people were included from the rural area of the

Chattogram district of Bangladesh. Nutritional status was assessed by the MNA scale and calorie intake was calculated from the 24-hour recall assessment. The study revealed that 14.7% of the participants were malnourished, 47% of them were at risk of malnutrition and 33.8% had normal nutrition. Regarding calorie intake, only 19.5% were found to take adequate calories. The observed rate of malnutrition in the current study was comparatively lower than the previous study conducted in Bangladesh. In the study of Ferdous et al and Kabir et al the reported proportion of malnutrition was 26.0% and 25.8%, respectively.[7,5] Thus, it appears that malnutrition is much higher among the Bangladeshi elderly residing in the rural community but the proportion of malnutrition is reducing. In the present study, 64% of the participants were females with a female to male ratio of 1.8:1 suggesting female predominance. The prevalence of malnutrition was higher in males (17.4%) than those in males (13.3%). However, this difference was not statistically significant. No significant association was found between gender and MNA score in other studies.[13,14] A previously conducted study in Bangladesh reported the proportion of malnourished females and males were 29.0 and 22.0%, respectively.[7] The female predominance could be because of greater life expectancy in females than males in Bangladesh.

The respondents' lower educational status was another important factor for malnutrition of the older population, where the odds of having malnutrition was 2.58 among the subjects with no formal education than those of education class six and above. Previous studies conducted by Ferdous et al and Krishnamoorthy et al showed 0.15 and 0.55 times fewer odds of being malnourished, respectively, among the respondents who had higher educational status. The level of education and expenditure on food is directly associated with nutritional status.[7,15,16]

Regarding the association between present vocational status and nutritional status present study observed a higher proportion of malnutrition and at risk of malnutrition among the unemployed elderly compared to the elderly who were engaged in any vocational activities. However, present vocational status failed to reveal as an independent factor for malnutrition in the current study. This was partially supported by the study of Tamang et al where unemployed elderly populations were at 3.23 times more risk of malnutrition compared to those who were employed.[17] This can be explained by the fact that the employed elderly possibly could have good financial status, resulting in good access to nutritional foods. In addition, they have to depend economically less on the caregivers for the fulfillment of dietary and basic needs needed for good health.

Regarding the association between comorbidity and nutritional status, a significant association was only observed in terms of ischemic heart diseases. Participants with IHD were a higher prevalence of at risk of malnutrition compared to their counterparts. However, the presence of any comorbidity, in general, did not reveal a significant factor for malnutrition in the current study. Similarly, Abraham et al observed that the presence of comorbidities or number of drugs does not show any association with nutritional status in their study.[18]

BMI showed a positive correlation with nutritional status in the present study similar to the study by Sahar et al. Ahmad et al and Abraham et al.[19,20,18] Prevalence of malnutrition was the highest among the underweight participants and the prevalence of at risk of malnutrition was the highest among obese individuals in the current study. In our study about 18.5% of the participants were obese and another 29.8% of the participants were overweight. Insufficient caloric intake in older adults is a serious problem and is related to unintentional weight loss, functional decline, morbidity, mortality, and quality of life.[21] Using the 24-hour dietary recall method only 19.5% were meeting the daily calorie requirement which was 10.9% in the study of Abraham et al conducted in India.[18]

As nutrition is an important determinant of the quality of the aging population, because of its potential to modulate the transitions from vulnerability to frailty and dependence of the elderly appropriate/right nutrition may contribute to the healthy well-being of the elderly and to their ability to recover from illness.[22] Therefore, it is very essential to assess the periodic nutritional status of older adults, in terms of both dietary patterns as well as anthropometric indices. This would facilitate the early detection of undernutrition among older adults and formulate policies or programs to address the health and nutritional problems of the aging populations.

LIMITATION

Though the present study was conducted in selected rural areas of Bangladesh with a relatively small sample size, these data are believed to be beneficial to the policymakers and program managers in the planning of better health services for the rural elderly in Bangladesh. The study findings highlighted the importance of determining malnutrition risk and malnutrition status in the elderly of rural Bangladesh.

CONCLUSIONS

The majority of the older population were at risk of malnutrition or malnourished irrespective of their sex. Daily calorie intake was adequate in only one-fifth of the total participants. Older age, lack of formal education, being from a lower socio-economic class, and deficient calorie intake were the factors associated with the proper nutrition of the older population.

RECOMMENDATION

The high prevalence of elderly individuals that are malnourished and are at risk of malnutrition as seen in the present study, it is necessary to have a more detailed evaluation of the nutritional state of the elderly and more regular evaluation, in addition to dietary intervention to reverse the observed symptoms. Government, NGOs, community, families, and medical and social science faculties need to give greater emphasis to provide health care, social support, and nutrition services to the elderly. Very old and the lower-income group should receive particular attention to meet their special needs.

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AUTHORS CONTRIBUTION

MSS-Conception, acquisition of data, data analysis, drafting & final approval.
SP-Design, interpretation of data, critical revision & final approval.
MC-Acquisition of data, drafting & final approval.
SD-Data analysis, drafting & final approval.

DISCLOSURE

All the authors declared no conflicts of interest.

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Original Article

Marine City Medical College Journal

Antimicrobial Sensitivity Pattern of Klebsiella Pneumoniae in Sputum of Community Acquired Pneumonia Cases in a Tertiary Care Hospital

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ABSTRACT

Background: Respiratory Tract Infection (RTI) is a common reason for antibiotic prescription in current practice. RTIs caused by multidrug-resistant Klebsiella pneumoniae (K. pneumonia) strains are increasing worldwide and have become a major public health problem. Continuous surveillance of antimicrobial resistance of the organism is necessary for formulating a sound antibiotic policy in any hospital. Updated knowledge of the sensitivity pattern is essential for appropriate empirical therapy. This study aimed to determine the antimicrobial sensitivity pattern of K. pneumoniae isolated from sputum samples from cases of Community Acquired Pneumonia (CAP) in a tertiary care hospital in Bangladesh.

Materials and methods: This prospective observational study included sputum samples from 87 patients diagnosed with CAP admitted in Chittagong Medical College Hospital during August 2018 to July 2019. Klebsiella were identified by standard microbiological techniques and antibiotic susceptibility testing was done by Kirby-Bauer disc diffusion method and interpreted as per CLSI guidelines.

Results: K. pneumoniae was identified in 39.1% of the samples. Culture positivity rate was higher in female than male (41.2% versus 37.7%). Antimicrobial susceptibility testing revealed isolates were sensitive to Amikacin (100%) Meropenem (97.1%), Levofloxacin (94.1%) Azithromycin (70.6%) and Ceftriaxone (64.7%). K. pneumoniae were highly resistant to Amoxicillin-Clavulanate, Cefixime, Cefuroxime, and clarithromycin (79.4%, 67.6%, 64.7%, and 61.8% respectively).

Conclusion: Considering the antibiogram, Amikacin, Meropenem and Levofloxacin should be preferred drugs for K. pneumoniae infection isolated from sputum sample in patients with CAP.

Key words: Antimicrobial resistance; Antibiotic susceptibility testing; Community acquired pneumonia; Klebsiella pneumoniae; Sputum.

INTRODUCTION

Community-Acquired Pneumonia (CAP) is the leading cause of death among infectious diseases and an important health problem, having considerable implications for healthcare systems worldwide. Despite important advances in prevention through vaccines, new rapid diagnostic tests and antibiotics, CAP management still has significant drawbacks. Mortality remains very high in severely ill patients presenting with respiratory failure or shock but is also high in the elderly.[1]

Klebsiella pneumoniae, a member of multidrug-resistant ESKAPE pathogens groups, is an agent of both nosocomial and community-acquired infections.[2] It is the most common gram-negative bacteria encountered by physicians worldwide.[3] Recent studies also demonstrated that, *K. pneumoniae* was the dominant pathogen from cases of bacteremic CAP.[4,5]

Recently, Tanni et al run an extensive molecular analysis on ESBL producing *K. pneumoniae* isolates from patients seeking medical care in different hospitals in Chattogram, Bangladesh.[6] The study revealed that, a total of 79%, 77%, 74.9%, 71%, 66% and 65% isolates exhibited resistance against cefuroxime, cefixime, cefotaxime, ceftazidime,

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cefepime and ceftriaxone respectively. However, still there is paucity of recent investigations for *K. pneumoniae* isolated from patients with CAP in the Bangladeshi context. It is essential to understand the antimicrobial sensitivity pattern of *K. pneumonia* which shows variation in different geographical settings; in order to implement effective control measures to prevent rapid spread of drug resistance.[7] The present study was done to find out the prevalence and antimicrobial susceptibility of *K. pneumoniae* isolated from sputum of CAP patients in a tertiary care hospital Chattogram, Bangladesh.

MATERIALS AND METHODS

The observational study was conducted from August 2018 to July 2019 in the Department of Medicine at Chittagong Medical College Hospital. Prior approval for the study was taken from the institutional Ethical Review Committee of Chittagong Medical College. Informed consent was obtained from the patients or their legal guardians.

Patients of both sexes age above 18 years who were diagnosed as CAP admitted in the Department of Medicine was included in the study as consecutive sampling method. Patient on immunosuppressive drugs- steroids and chemotherapy and getting antibiotic for more than 48 hours were excluded.

Sputum samples were aseptically inoculated on to Blood, Chocolate and Mac Conkey agar plates and incubated overnight at $37^{O}C$.[8] *K. pneumoniae* isolates were identified by their morphology and biochemical characteristics. Positive isolates were screened for antimicrobial susceptibility testing by Kirby-Bauer disc diffusion method on Mueller-Hinton agar (Hi-Media) and interpreted as per CLSI guidelines.[9]

After collection data were entered into Microsoft Xcel data sheet to produce a master sheet. Then they were fed into SPSS version 23 software for the processing and analyses. Both descriptive and inferential statistics (Chi-square test and Mann-Whitney U test) were used in the analysis. p value <0.05 was considered as statistical significance.

RESULTS

During the one-year period, a total of 87 sputum samples were processed for culture and sensitivity testing. Sputum samples of patients of more than 18 years of both sexes were processed. A total 34 *K. pneumoniae* were isolated thus culture positivity rate was 39.1% (Figure 1).

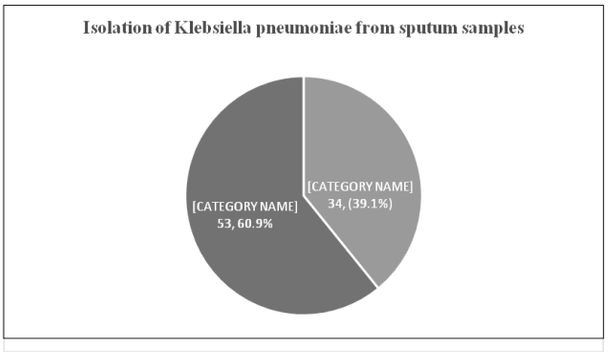

Figure 1 Isolation of Isolation of Klebsiella pneumoniae from sputum samples (n=87)

Table I shows the distribution of K. pneumoniae infection in various age groups and sex groups. Isolation rate was highest in patient aged above 70 years (57.1%) followed by 41-50 years (50%). Culture positivity rate was higher in female than male (41.2% versus 37.7%).

Table I Frequency of age and sex wise distribution of the culture positivity of *K. pneumoniae*

Age groups	Male			Female			Total		
	Total	Culture positive		Total	Culture positive		Total	Culture positive	
	n	n	%	n	n	%	n	n	%
≤20 years	4	1	25.0	2	1	50.0	6	2	33.3
21-30 years	3	0	0.0	6	4	66.7	9	4	44.4
31-40 years	8	4	50.0	5	2	40.0	13	6	46.2
41-50 years	11	6	54.5	5	2	40.0	16	8	50.0
51-60 years	11	4	36.4	7	2	28.6	18	6	33.3
61-70 years	12	3	25.0	6	1	16.7	18	4	22.2
71-80 years	4	2	50.0	3	2	66.7	7	4	57.1
Total	53	20	37.7	34	14	41.2	87	34	39.1

Antimicrobial susceptibility pattern of K. pneumoniae is shown in Table II. Antimicrobial susceptibility testing revealed isolates were sensitive to Amikacin (100%), Meropenem (97.1%), Levofloxacin (94.1%), Azithromycin (70.6%) and Ceftriaxone (64.7%). K. pneumoniae were highly resistant to Amoxicillin-Clavulanate, Cefixime, Cefuroxime and Clarithromycin (79.4%, 67.6%, 64.7% and 61.8% respectively).

Table II Antibiotic Sensitivity of Klebsiella Pneumoniae (n=34)

Name of antibiotic	Sensitive		Resistance	
	n	%	n	%
Amoxicillin-Clavulanate	7	20.6	27	79.4
Clarithromycin	13	38.2	21	61.8
Azithromycin	24	70.6	10	29.4
Meropenem	33	97.1	1	2.9
TMS	19	55.9	15	44.1
Ceftazidime	14	41.2	20	58.8
Ceftriaxone	22	64.7	12	35.3
Cefuroxime	12	35.3	22	64.7
Cefixime	11	32.4	23	67.6
Levofloxacin	32	94.1	2	5.9
Amikacin	34	100.0	0	0.0

TMS: Trimethoprim-Sulphamethoxazole.

Table III shows that, outcomes in K. pneumoniae positive CAP patients were unfavourable than the patients with negative for K. pneumoniae, in-terms of in-hospital mortality, 30-day mortality, and 30-day readmission rate. However, none of the difference reached statistical significance (p>0.05).

Table III Association between Klebsiella Pneumoniae positivity and outcome of the CAP patients

Variables	Klebsiella Pneumoniae sputum culture		
	Positive (n=34)	Negative (n=53)	p value
In hospital mortality	4 (11.8)	2 (3.8)	0.151*
Length of hospital stay, days	6.0 (6.0-8.0)	6.0 (6.0-7.0)	0.767†
Re-admission within 30 days	4 (12.5)	5 (9.6)	0.678*
30-day mortality	7 (20.6)	7 (13.2)	0.376*

Data were expressed as frequency (%) or *Chai-square test, †Mann-Whitney U test.

DISCUSSION

Regular surveillance of antibiotic susceptibility pattern may help to overcome the indiscriminate use of antibiotics a major cause of emergence of drug resistance among pathogens and to develop antibiotic policies.

The present study reveals that, *K. pneumoniae* infection was predominant organism isolated from females (41.2%) than males (37.7%), Klebsiella infection was more commonly seen in persons aged 41-50 and 71-80 years of age. Similar age and sex distribution of K. pneumoniae culture positivity was found by Shilpa et al.[9] A female dominance of infection was observed in age group 21-30 years (66.7%) and 71-80 years (66.7%) than males (0% and 50%, respectively), which were also in line with the previous studies.[9,10]

Frequently use B-lactam antibiotics and Macrolides for the treatment CAP are first line regimens but emerging strain are more resistant to these conventional antibiotics. Multi drug resistant to B-lactamase, Macrolides and Fluroquinolone is an emerging problem and complicating the management of CAP.[11] Present study highlights the most alarming situation of highly diverse antibiotics resistance, where K.pneumoniae were highly resistant to Amoxicillin-Clavulanate (79.4%), Cefixime (67.6%), Cefuroxime (64.7%), and clarithromycin (61.8%). This may be due to the production of β-lactamase enzymes which cause the hydrolysis of β-lactam ring resulting in inactivation of β-lactam antibiotics.[12]

In present study, Aminoglycoside such as Amikacin (100%) was the most effective antibiotic agent against *K. pneumoniae* in the present study, followed by β-lactam antibiotics Meropenem (97.1%). However, Meropenem is costly and not recommended by the guideline published by American thoracic society and Infectious disease society of America.[13] Furthermore, sensitivity of *K. pneumoniae* to amikacin could mean that there is a possibility of sensitivity to other aminoglycosides such as gentamycin, streptomycin, neomycin, and kanamycin. However, this is not totally certain as each of the aminoglycosides have a slightly different mechanism of resistance due to their different aminoglycoside modifying enzymes chromosomal mutation e.g streptomycin and impermeability of membranes.[9,10] Among the fluoroquinolones tested, Levofloxacin (94.1%) was the most effective antibiotic against *K. pneumoniae*.

LIMITATIONS

Limited sample size was one of the major limitations of the present study. In addition, caution should be exercised in generalizing our study's findings due to the use of convenience sampling from one institution.

CONCLUSIONS

The data of this study may be used to determine trends in antimicrobial susceptibilities to formulate local antibiotic policies and overall to assist clinicians in the rational choice of antibiotic therapy. High antibiotic resistance of *K. pneumoniae* towards commonly used antibiotics were observed in the present study. *K. pneumoniae* infection was predominant in females, 41-50 years and above 70 years of age. Considering the

antibiogram, Amikacin, Meropenem and Levofloxacin should be preferred drugs for empirical treatment of suspected *K. pneumoniae* infection in patients with CAP.

RECOMMENDATION

Large samples size with multicentre study is to be recommended.

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The authors like to thanks the patients who participated in this study and their family.

AUTHORS CONTRIBUTION

MAK-Conception, acquisition of data, data analysis, drafting & final approval.
SP-Design, interpretation of data, critical revision & final approval.
MHR-Acquisition of data, drafting & final approval.
MS-Data analysis, drafting & final approval.
SD-Acquisition of data, drafting & final approval.

DISCLOSURE

All the authors declared no conflicts of interest.

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Original Article

Marine City Medical College Journal

Socio Demographic Profile of Renal Diseases : A Single Center Retrospective Hospital Based Study

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ABSTRACT

Background : Position of renal diseases among the Non Communicable Diseases (NCD) is increasing in recent decades. And among the renal diseases Chronic Kidney Disease (CKD) is a major health priority owing to its poor outcome and economic burden. Patients attending in a tertiary hospital in a developing country faces multiple hurdles for their socio-economic condition, social stigmata and available logistic support. This study is aimed to identify patients of different renal diseases and comorbidities. Some convenient socio-demographic variables like age, sex and residence and different aetiology of renal diseases of patients in a non-Government tertiary hospital in southern part of Bangladesh were evaluated.

Materials and methods: This is a retrospective chart review study including all consecutive patients in a structured case record form encompassing their age, sex, residence and stratifying their etiology according to these variables.

Results: 5% of total patients have some kind of renal disease. Significant proportion of patients belongs to >50 years (p=.026). CKD patients were significantly higher than AKI (p= 0.04). Only 6% of CKD patients has no evident aetiology. 16 % of patients had some risk of renal disease. UTI is more prevalent in female (80% vs 20%). Most of the patients of UTI did not need hospital admission. Equal number of patients from rural and urban were included. DM and HTN are the most frequent causes of CKD.

Conclusion : Rural and urban population attending Nephrology department has no statistical significance but there is a higher prevalence of DM, HTN and old age in all types of renal diseases.

Key words : Chronic kidney disease; Prevalence; Renal disease.

INTRODUCTION

According to WHO, Non Communicable Diseases (NCDs) kill 41 million people each year, equivalent to 74% of all deaths globally. 86% of these deaths occur before age of 70 in low and middle income countries. Of all NCD two million people died due to diabetes including kidney disease.[1] CKD is the commonest NCD among the all renal diseases. CKD affects >10% of the general population worldwide amounting to >800 million individuals. The causes of CKD in developing country are incompletely understood and often undiagnosed . In underdeveloped country usually the causes of CKD are DM, HTN, recurrent infection and GN.[2] A few studies on CKD have been conducted in Bangladesh.[3-6]

About 65% of the Bangladeshi population resides in rural areas. All of the above studies have been conducted in Urban area of Bangladesh.[3] As a newly developed Nephrology Department in tertiary hospital with a surrounding population of peri-urban area, the prime objective of the study to evaluate whether the same type of renal disease patients are attending in Nephrology Department of Marine City Medical College & Hospital like other areas of Bangladesh with same socio-demographic variables.

MATERIAL AND METHODS

This is a retrospective chart review study conducted in Marine City Medical College & Hospital, Chattogram from September to November 2021 and May 2022 to September 2022. This non continuous inclusion of

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patients is due to varied availability of patients in this COVID pandemic. The study participants were stratified into two age groups <50 year and >50 year . All consecutive individuals of either sex , hailing from rural or urban areas were included. The patients were recorded in a structured case record form containing current and past medical history , information on age , gender and residence . Indoor patients who underwent renal biopsy were also included . Statistical analysis was performed using simple Microsoft excel. Data were presented as percentage and p value was measured by Z-score calculator for proportions. p value <0.05 for one-tailed hypothesis was taken as statistically significant. As this a chart review study and patients were represented anonymously no consent was required. The study was approved by the Departmental Ethical Committee .

RESULTS

Table I Distribution of Sex, Age and Renal Disease Profile

Variables	Outdoor (n=260)	Indoor (n=122)
Male	144 (55.38%)+	116 (44.6%)++
Female	63 (51.63%)+	59 (48.36%)
Age <50 year	103 (39.6%)	68 (55.73%)
Age >50 year	157 (60.38%)	54 (44.26%)
	Z=-1.943, p= .026 **	
Comorbidities with risk of Renal disease #	49 (18.84%)	11 (9.01%) z=0.794, p= 0.429
Renal : AKI	4 (1.53%)	14(11.47%)
CKD	116 (44.6%)	68 (55.73%)
	z=-1.745 p= 0.040	z= -3.002 p= 0.001
Renal disease with renal impairment (AKI or CKD not confirmed) ***	53 (20.38%)	9 (7.37%) z= 0.936, p= 0.173
UTI	17 (6.53%)	3 (2.45%)
		z=0.329 , p= 0.370
Rural	120 (46.15%)+++	68 (55.73%)++++
Urban	140 (53.84%)+++	54 (44.26%)++++

+z = .531, p= .298 (Comparing male and female in outdoor)
++z= .502, p= .308 (Comparing male and female in indoor)
+++ z=-1.286, p=0.098 (Comparing rural and urban in outdoor)
++++ z=1.316, p =0.093 (Comparing rural and urban in indoor)

**If compare combined patients both outdoor and indoor with respect to age #
Isolated HTN, DM . H/o taking NSAID, Pyuria (Culture negative) with LUTS (Lower urinary tract symptoms).
*** requires follow-up.

Table II Percentage of different categories of Renal diseases among total patients (n=382)

Variable	Number	Percentage
Total CKD ***	184	48%
CKDu	11	6% of CKD
Total AKI ***	15	4%
AKI requires admission	14	93% of AKI
AKI/CKD (Not confirmed)	62	16%
UTI	20	5%
• Female	16	80% (of total UTI)
• Male	04	20% (of total UTI)
Isolated comorbidities with Risk of renal involvement	60	16%

*** IF CKD and AKI compared it is highly significant {z=3.295, p=0.005}

Table III Patients attitude towards renal Biopsy (n= 37)

Variables	Number	Percentage
Patient agreed to do Renal Biopsy	20	54%
Not agreed to do renal biopsy	17	46%

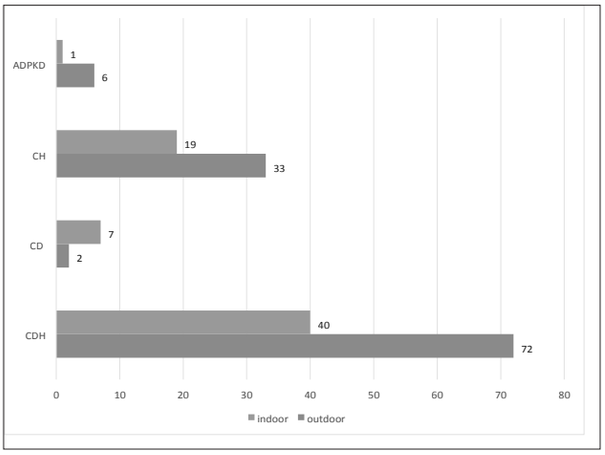

Figure 1 Aetiology of CKD patients as per outdoor and Indoor admission

CDH : CKD due to HTN and Diabetes mellitus
CD : CKD due to Diabetes Mellitus
CH : CKD due to HTN
ADPKD : Autosomal Polycystic Kidney Disease.

Table IV Percentage of different aetiology of CKD (n=180)

Variable	Number	Percentage	Requires admission
CKD due to HTN and DM	112	61%	35%
CKD due to HTN	52	28%	37%
CKD due to DM	9	5%	78%
ADPKD	7	4%	7%

Out of total 7000 patients attending the hospital 282 patients were categorized as of renal disease (5%).

Table I showed though male preponderance is in both outdoor and Indoor patients, but it is not statistically significant. Significant proportion of patient attending outdoor belong to >50 years. In both outdoor and indoor patients proportion of CKD patients are more than AKI and it is statistically significant.

Table II showed that Most of the patients belong to CKD and it is statistically significant as compared with AKI. Around one sixth of population are at risk of developing renal Disease.

80% of patients suffering from UTI are female.

Table III showed almost half of patients disagreed to do renal biopsy.

Figure- I and Table-IV showed three –fifth of patients have both DM and HTN but patients with only DM (Without HTN) need highest percentage of admission.

DISCUSSION

The overall prevalence of the renal diseases attending in hospital is 5% which is lower than the pooled prevalence (17.3%) in Bangladesh.[7] The common causes of AKI in outdoor patients are mostly AKI on CKD but the causes of AKI in indoor patients are mostly due to hypovolemia then AKI on CKD.[8]

There is higher prevalence of CKD both in outdoor (44.6%) and indoor (55.73%) patients among the age group >50 year (p=0.026) .This is more or less same as that of United States (39.4%) and India (40.6%).[9] The prevalence of DM and HTN has been increased in Bangladesh over the past two decades.[10,11]

Our study showed that CKD is more in DM and HTN. Other studies also showed that HTN is common in CKD and DM.[12] So, particular attention to manage these diseases demand special attention to slow down CKD. In our study it is quite evident that CKD ranks the highest percentage of renal diseases. Risk factors such as DM, HTN and elderly population needs special care. The incidence of CKD of unknown cause is 6%. This study contrasts 49% with the percentage in SriLanka.[13] This is probably due to small size of population and absence of health care surveillance.

UTI is one of the common infectious disease in human affecting 150 million people every year.[14] It is also common in community and hospitals in Bangladesh. The commonest prevalence in female is 64% and 15% in male. In our study it is 80% vs 20%.However our sample is very small.[15]

Only 50% of patients with clinical and biochemical feature of GN agreed to do renal biopsy, But with too small size it is difficult to comment, however social false belief and illiteracy may be the reasons.

Most of the studies of CKD has been conducted in urban areas of Bangladesh.[3,4,5] Our hospital is at the location of Per-urban area and there is no difference in number of patients coming from rural or Urban areas. But our sample is too small to comment on the difference of socio-demographic statistics between rural and urban population.

LIMITATIONS

- This is a very small study in a newly developed nephrology unit in a tertiary hospital during COVID pandemic
- All demographic variables of patients were not included due to the incomplete data of register book
- Patients were included according to clinical diagnosis & were not verified by other laboratory data
- There may be recall bias due to dependency of patients history without verifying Birth Certificate and lack of initial diagnosis.

CONCLUSION

In our study the percentage of kidney diseases among the rural and urban population attending Nephrology Department has no statistical significance and there is a higher prevalence in DM, HTN and old age in all types of renal diseases.

RECOMMENDATION

A large prospective study including all socio economic variables of renal disease in patients attending hospital will give a more clear view of aetiology of renal disease. Scale-up of preventive and therapeutic measures to control the occurrence of CKD is mandatory in a poor resource country like us.

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AUTHORS CONTRIBUTION

IN-Acuisation of data, drafting & final approval.
RKS-Interpretation of data, drafting & final approval.
SD[3]-Data analysis, drafting & final approval.
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MAI-Acquisition of data, drafting & final approval.

NT-Acquisition of data, drafting and final approval.
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DISCLOSURE

All the authors declared no conflicts of interest.

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Original Article

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Multimorbidity and Its Associated Factors among the Geriatric Population of Chattogram District in Bangladesh

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ABSTRACT

Background: Multimorbidity is becoming an emergent global health concern. Understanding the multimorbidity burden among the elderly is a prerequisite for comprehensive geriatric care. This study aimed to investigate the frequency of multimorbidity and its associated factors among the senior population in some selected rural and urban areas of the Chattogram district of Bangladesh.

Materials and methods: Through a multistage sampling, 408 subjects aged 60 years and over from two Upazilas of Chattogram district (n=203) and two wards of Chattogram City Corporation and one Paurosova (n=205) were included in this cross-sectional study from October 2018 to September 2019. Socio-demographic and clinical data were collected through face-to-face interviews, clinical examination, and cross-checking of the prescriptions. Multimorbidity was defined as the presence of two or more of the following chronic diseases: hypertension, diabetes, cancer, cardiovascular Diseases, stroke and Chronic Obstructive Pulmonary Disease (COPD).

Results: Approximately 17.6% of individuals suffer from multimorbidity, of which hypertension accounted for (44.3%) followed by diabetes (33.6%) heart diseases (17.9%) stroke (2.5%), COPD (14.2%) and cancer (1.7%). In multivariable-adjusted models, factors associated with multimorbidity were older age and low economic condition.

Conclusion: The results of this study highlight the high prevalence of multimorbidity in the elderly population, although it explored the burden and identified risk factors considering only six chronic diseases.

Key words: Elderly; Geriatric population; Morbidity pattern.

INTRODUCTION

Multimorbidity in Non-Communicable Diseases (NCDs) is a complex global healthcare challenge that is becoming increasingly prevalent. It is commonly defined as the presence of two or more NCDs in an individual.[1] The increase in longevity in developed and developing countries alike is a testament to the success of 20th-century medicine and economic and social development. But such success brings consequences increased longevity is accompanied by complexity and multimorbidity. Although multimorbidity is not a problem only for older adults, its prevalence is much higher in older age groups, with 65% of people aged 65–84 years and 82% of people aged at least 85 years affected.[2,3] With a 25-year increase in life expectancy over 50 years from 1970 to 2019, it is projected that about 22% of the total population of Bangladesh will be aged 60 years or over by 2050.[4,5] Hence, the need for the hour is to set up special health services for the senior population by the common health problems and morbidity profile.[6]

Moreover, Bangladesh, being a developing country in South-East Asia and struggling with the double burden of infectious as well as NCDs, has not yet addressed this health issue at the national level, although it can be a challenge for the healthcare system in near future, given the rising size of older populations.[7] There is also very limited documentation on the status of multimorbidity in Bangladesh, especially among elderly.[8,9] The purpose of this study was therefore to

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determine the prevalence of multimorbidity among the elderly in some selected rural and urban areas in Chattogram, Bangladesh, which may benefit the design and implementation of a modified healthcare system with consideration for patients with multimorbidity.

MATERIALS AND METHODS

The current cross-sectional analytical study was conducted among thegeriatric dwellers of rural and urban Chattogram, Bangladesh, from October 2018 to September 2019. Before commencing the study, approval was obtained from the Ethical Review Committee of Chittagong Medical College.For each participant, informed consent was brought before the interview/data collection.

The target population included all dwellers aged 60 years and older in some selected rural and urban areas of the Chattogram district in Bangladesh. Individuals who refused to participate voluntarily in the study were excluded. Through multistage sampling required number of the participants were selected from the study sites.

The prevalence of geriatric multimorbidity is more than 60% in different studies.[11]A sample size of 410 was estimated for the present study using the formula / (Prevalence of 50%, allowable error 10% and 95% confidence) of which 203 senior people from rural areas and 205 senior people from urban areas.

Data were collected with a pretested structured case record form which had two parts; questions related to socio-demographic characteristics and questions about morbidity patterns. The primary outcome variable for this study is multimorbidity, which is when an individual suffers from two or more of the following NCDs: hypertension, diabetes, COPD, cancer, heart diseases and stroke. Self-reported morbidity, physical examination, review of medical records, and investigations (Hb%, Random Blood Glucose) reports were used to identify morbidity. Socio-economic status was defined as per the Modified Kuppuswamy Socio-economic scale.[12]

SPSS version 23.0 was used for data entry and analysis. Variables were compared between groups by Chi-square testor Fisher's exact test. Binary logistic regression was used to assess the associations ofsociodemographic and socioeconomic variables with the presence of multimorbidity. Results were expressed as Odds Ratios (ORs) and their respective 95% Confidence Intervals (CIs). The statistically significant level of findings was considered as a p-value<0.05.

RESULTS

Mean age of the participants was 66.17±5.76 years and most (71.3%) of them were in 60-69 years age group. Male and female representation was almost equal. Other socioeconomic characteristics are described in Table I.

Table I Sociodemographic characteristics of the respondents (n=408)

Variables	Frequency (Percentage)
Age	
60-69 years	291 (71.3%)
70-79 years	103 (25.2%)
≥ 80 years	14 (3.4%)
Sex	
Male	208 (52.0%)
Female	200 (48.0%)
Residence	
Rural	203 (49.8%)
Urban	205 (50.2%)
Education	
Illiterate	168 (41.2%)
Literate	240 (58.8%)
Marital status	
Partnered	353 (86.5%)
Single	55 (16.3%)
Family type	
Nuclear	210 (51.5%)
Joint	198 (48.5%)
Vocational status	
Working	101 (24.8%)
Not working	307 (75.2%)
Socio-economic class	
Upper	8 (2.0%)
Upper middle	54 (13.2%)
Lower middle	86 (21.1%)
Upper lower	179 (43.9%)
Lower	81 (19.9%)
Economic dependency	
Independent	87 (21.3%)
Partly dependent	43 (10.5%)
Fully dependent	278 (68.1%)

The prevalence of individual diseases among study participants was as follows: hypertension 44.3%, diabetes 33.6%, heart diseases 17.9%, stroke 2.5%, COPD 14.2%, cancer 1.7%. In terms of multimorbidity, 17.6% of the study population presented two or more of the aforementioned diseases (Table II).

Table II Prevalence of chronic diseases individually and clusters (n=408)

Chronic diseases	Frequency (Percentage)
Individual diseases	
Hypertension	181 (44.3%)
Diabetes	145 (35.6%)
Heart diseases	73 (17.9%)
Chronic obstructive pulmonary diseases	58 (14.2%)
Stroke	10 (2.5%)
Cancer	7 (1.7%)
Disease clustering	
Having only one physical condition	161 (39.5%)
Multimorbidity	72 (17.6%)
Hypertension, diabetes, heart diseases	15 (3.7%)
Hypertension, diabetes, stroke	14 (3.4%)
Hypertension, diabetes, cancer	5 (1.2%)
Hypertension, diabetes, COPD	5 (1.2%)
Hypertension, heart diseases, stroke	17 (4.2%)
Diabetes, heart diseases, Stroke	12 (2.9%)
Hypertension, diabetes, heart diseases, stroke	4 (1.0%)

COPD: Chronic Obstructive Pulmonary Disease.

After adjusting the other variables in binary logistic regression analysis, positive and statistically significant associations of the presence of multimorbidity with older age and lower socio-economic class were observed (Table III).

Table III Association of socio-demographic factors with the presence of multimorbidity in study subjects Odds Ratios (ORs) from binary logistic regression

Variable	Presence of multimorbidity	
	OR (95% CI)	p value
Age		
60-69 years	1.0 (Reference)	
70-79 years	1.35 (1.01-5.15)	0.034
80 years	1.99 (1.12-8.45)	0.042
Sex		
Male	1.0 (Reference)	
Female	1.18 (0.35-3.47)	0.063
Residence		
Rural	1.0 (Reference)	
Urban	1.02 (0.09-3.21)	0.652
Education		
Literate	1.0 (Reference)	
Illiterate	1.01 (0.02-3.26)	0.142
Marital status		
Partnered	1.0 (Reference)	
Single	1.09 (0.02-2.59)	0.105
Family type		
Nuclear	1.0 (Reference)	
Joint	0.92 (0.02-2.59)	0.117
Socio-economic status		
Upper and middle class	1.0 (Reference)	
Lower class	1.94 (1.12-4.12)	0.043

OR: Odds Ratio, CI: Confidence Interval, Significant values were in bold face.

DISCUSSIONS

The present study demonstrated a high prevalence of multimorbidity (17.6%) in terms of some selected major NCDSs. A recent study among the general population of 58 districts in Bangladesh in individuals aged ≥35 the prevalence of multimorbidity was 8.4% when counted within six diseases used in the present study.[9] However, when multimorbidity was defined as existence of two or more chronic conditions (Including visual disturbance, hearing loss, dental problems, etc) within an individual, Sara et al.[10] observed the overall prevalence of multimorbidity among the elderly was 56.4% in their hospital-based study. Collectively, the present study findings and other research indicated that multimorbidity is a public health burden in Bangladesh. Hypertension was the most common non-communicable disease in the current study. Present in 44.3% of the participants, followed by diabetes, heart diseases, COPD, stroke, and cancer. In Bangladesh, approximately 40–65% of elderly people suffer from hypertension.[11] Diabetes is another growing health problems in the elderly population globally and in southeast Asia.[12] These findings emphasize the need to implement effective and low-cost management regimens based on absolute levels of NCDs risk appropriate for the economic context.

The present study observed that increasing age was independently associated with the presence of multimorbidity, which was similar to the previous studies.[9,13,14,15] Most of the previous studies in the western population have shown that low socioeconomic status and less education are positively and specifically associated with multimorbidity.[15] The prevalence of morbidity was more among the elderly who belonged

to the lower socioeconomic class than those who belonged to the higher socioeconomic class. This difference was highly significant, as seen in the WHO health profile of the elderly in the Southeast Asia region.[16] Other studies reported higher age, male gender, single marital status, and low incomes were the predictive factors among the older population.[13,17,18]

LIMITATIONS

The study's cross-sectional design prevents conclusions about the causality of the observed associations. Data reported by the subjective could be prone to recall bias.

CONCLUSION

In conclusion, the current study identifies a high prevalence of multimorbidity among Bangladeshi elderly. It is comparable with many developing countries and thus highlights the importance of recognizing associated risk factors. This would help inform policy-makers and further develop preventive strategies and clinical guidelines.

RECOMMENDATIONS

A health screening programme should be initiated for elderly citizens in Bangladesh's primary health care facilities. There is a need for a detailed national-level exploration including the rural and urban population in a larger scale to document the current prevalence, incidence and specific risk factors associated with multimorbidity.

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AUTHORS CONTRIBUTION

SMKH-Conception, acquisition of data, drafting & final approval.
MAYC-Interpretation of data, critical revision & final approval.
SNF-Data analysis, critical revision & final approval.
SD-Data analysis, drafting & final approval.
SP-Design, critical revision & final approval.

DISCLOSURE

All the authors declared no competing interest.

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Original Article

Marine City Medical College Journal

Management of Pediatric both Bone Forearm Fractures Using Titanium Elastic Nailing System: A Prospective Study of 45 Cases

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ABSTRACT

Background: Forearm fractures include 25% of all infantile complaints. Forearm fractures account for 30 to 50% of all pediatric fractures and boys were more prone to forearm fractures. Pediatric diaphyseal bone fractures can be treated conventionally through closed manual reduction and casting as the abilities of the pediatric bones to remodel. Titanium Elastic Nails (TENS) are extensively used in children because it is innocuous. The aim of the study was to understand the management procedure of pediatric bone forearm fractures

Materials and methods: This descriptive cross-sectional study was conducted at the Department of Orthopedics, Chattagram Maa-O-Shishu Hospital Medical College. The study duration was from January 2018 to June 2022. During this period, a total of 45 patients were selected following the inclusion and exclusion criteria.

Results: The mean age of the participants was 9.13 years. Around three-fourths of the study population (34,75.6%) were male and only eleven patients were female & forty-two patients (42,93.3%) had no complaints of strenuous activity. Fractures involved the middle third in most of the patients (22,48.9%). Closed reduction and internal fixation with titanium elastic nail system were done in forty-four patients (44,97.8%).

Conclusion: Forearm fractures are the most common fractures in children due to fall injuries. Open reduction is the standard treatment for bone arm fractures, but closed reduction and internal fixation with TENS seem to be satisfactory treatment options for the fixation of pediatric bone fractures.

Key words: Forearm; Fracture; Nailing; TENS.

INTRODUCTION

Children are more likely to get fractures than other types of injuries. Forearm fractures are the most common kind of fracture in children.[1] Forearm fractures account for 25% of all infantile complaints. According to some authors, forearm fractures occur for 30 to 50% of all pediatric fractures.[2] However, there are other forms of bone fractures, with four basic categories: displaced, non-displaced, open, and closed.[3] According to certain research, boys are more prone to forearm fractures, and the risk of fracture among children under the age of 16 is 42% in boys and 27% in girls.[3,4] One of the most common fracture locations is the distal radius. Forearm fractures are classified according to their anatomical position (Distal, middle and proximal) the bones involved, and the presence or absence of radioulnar joint augmentation. When compared to inaccessible radial or ulnar shaft injuries, fractures of the radius and ulna are more prevalent.[5] As the capacities of the juvenile bones to rebuild, pediatric diaphyseal bone fractures can be treated routinely with closed manual reduction and casting. These distinguishing characteristics of juvenile bones aid in the correction of angular deformity. The radius and ulna account for 5% of all diaphyseal bones. The return of pronation to normal boundaries.[6,7] suggests that the decrease was successful. The lost movement of many forms of fracture is forearm rotation. In half of the patients with post-conservative involvement of forearm fractures, residual rotational losses of up to 15 degrees have been documented.[8] Titanium Elastic Nails (TENS) are designed to treat diaphyseal fractures if the canal is fine or the implant's elasticity is dominating. TENS is also utilized to treat metaphyseal and epiphyseal

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injuries such as radial neck fractures, as well as to repair tiny bones such as carpal and tarsal bones. The flexibility of the elastic nails allows them to be implanted at a site that avoids deformation of the bone development plate in pediatric applications.[9] TENS is often used in children because it is safer and more effective than plating.[10] This method retains the periosteum, allowing bone to recover in a closed and undamaged biological environment.[11,12] TENS lacks axial and rotational stability, yet, in the event of secondary bone healing, they are substantially more stable.[13] TENS is commonly utilized in juvenile fractures because of the thick periosteum and increased potential for bone modification, but it is not commonly used in adults due to axial loading and lack of resistance to rotating force. TENS are generally appropriate for the stabilization of proximal forearm fractures, which prevents major soft tissue separation and the need for PIN injury.[11,12] The study's goal is to better understand the results of treating juvenile bone forearm fractures with Titanium Elastic Nailing. The aim of the study to understand the management procedure of pediatric both bone forearm fractures.

MATERIALS AND METHODS

This descriptive observational study was conducted at the Department of Orthopedics, Chattagram Maa-O-Shishu Hospital Medical College. The study duration was from January 2018 to June 2022. During this period, all pediatric cases of forearm fractures were interviewed alongside their legal guardians, and a total of 45 patients were selected following the inclusion and exclusion criteria. After taking a careful history, enough clinical examinations were taken for confirmation. All observations were noted in the clinical data sheet. The results were calculated and interpreted through appropriate statistical analysis with the help of a statistician and presented in a table with other illustrations. Verbal consent was taken before recruiting the study population. Ethical clearance was taken from the hospital. The information was kept confidential only to be used for the study purpose.

Inclusion criteria

- Patients over 3 years of age
- Patients under 18 years of age
- Both bone fracture cases in the forearm
- Patients with displaced fractures or grossly rotated fractures
- Patients who had given consent to participate in the study.

Exclusion criteria

- Patients with isolated forearm bone fracture
- Patients with type II and III compound fractures or fractures with neurovascular injury
- Unable to answer the criteria question
- Exclude those affected with other chronic diseases, blood disorder, congenital heart diseases, etc.

This study was approved by the Institutional Ethical Committee.

RESULTS

Table I Distribution of the study population based on patient age (n=45)

Age in years	n	%
≤5	9	20.00%
6-10	19	42.22%
11-15	13	28.89%
>15	4	8.89%
Mean ± SD	9.13 ± 3.563	
Age Range	4-16	

Among the participants, 42.22% of the participants were between the age of 6-10, 28.89% belonged to the age group of 11-15, and 20% were <6 years of age. The mean age of the participants was 9.13 years.

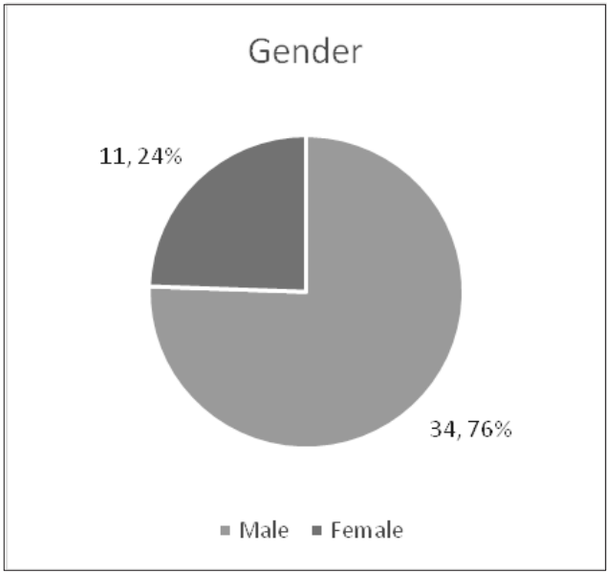

Figure 1 Gender Distribution of the study participants (n=45)

Among the participants, over 3/4t[hw]ere male and 24% were female.

Table II Distribution of the study population based on complaint level (n=45)

Symptoms	n	%
No complaintswithstrenuousactivity	42	93.3%
Mild complaints with strenuousactivity	3	6.7%

The majority 93.3% of the participants had no complaints during strenuous activities, while 6.7% had mild complaints during strenuous activities.

Table III Distribution of the study population based on level of fractures (n=45)

Leveloffracture	n	%
Proximalone-third	16	35.6%
Middleone-third	22	48.9%
Distalone-third	7	15.6%

Almost half the participants had a middle 1/3rd fracture, 35.6% had a proximal 1/3rd fracture, and 15.6% had a distal 1/3rd fracture.

Table IV Distribution of the study population based on the type of surgical procedure (n=45)

Type of surgical procedure	n	%
Closed reduction	44	97.8%
Open reduction	1	2.2%

Only 1 participant had an open reduction, while 97.8% had closed reductions.

DISCUSSION

Forearm fractures are relatively prevalent in children, and the prevalence of fractures in shaft forearm bones is higher in children aged 6 to 16, with the highest occurrence in those aged 12 to 16.[13] The prevalence of distal radial fractures in children appears to be increasing, although it is difficult to pinpoint the specific cause of this consistent rise over the last 40 years .[14,15] The participants in this present study ranged in age from four to sixteen years old. According to another story, the patients' ages varied from 1.2 to 18 years. The majority of female patients were 12 years old, while the majority of male patients were 12 years old.[16] Another related observation revealed that the patients' ages ranged from 5 to 15 years old.[17] It was also discovered that the bulk of our study's participants was between the ages of 6 and 10 years. Our research participants' mean age was 9.13 years, which was lower than the findings of another study, where the mean age was 11.2 years.[18] In the current study, most of the patients (34,75.6%) were male, with only a handful (11,24.4%) female. Another study indicated that around 80% of patients were male and approximately one-fifth of the patients (19.18%) were female. This greater male frequency was consistent with the findings of other research, indicating that forearm fractures are more prevalent in men.[16,19] The majority of patients (42,93.3%) in the current research had no complaints, while three individuals (3,6.7%) experienced moderate complaints during strenuous activity. According to Odisha research, 87.5% of patients had no symptoms, 10% had minor issues, and only 2.5% had minor difficulties with routine activities. A study conducted in Paris, France showed no complications were recorded in the study group. According to comparable research, 92% reported no problems and 8% had minor issues.[18] Fractures affected the proximal third of the shaft of the forearm bones in sixteen patients (16,35.6%), the middle third in the majority of patients (22,48.9%), and the distal one-third in seven patients (7,15.6%). in this current study. It can be seen that forearm fractures were more prevalent around the middle portion of the bone. This was also consistent with other research findings.[17] Other studies, however, have revealed that a fracture on the distal portion of the bone is more prevalent.[20,21] Closed reduction and internal fixation with titanium elastic nail system were performed in forty-four patients (44,97.8%). When closed reduction failed in one patient, a mini-incision was made over the fracture site, and internal fixation with a titanium elastic nail system was performed. As a result, the management was primarily done through a closed reduction approach.In present study showed that the majority of the patients (2,93.3%) results came out excellent, and satisfactory in three patients (3,6.7%). Another study revealed that 87.5% of patients experienced excellent outcomes, and 2.5% of patients experienced fair results.[18] Another relevant article found that all patients had excellent outcomes in terms of fracture union.[19] The titanium elastic nailing system is an operative and minimally invasive approach to the fixation of forearm fractures with excellent outcomes with lesser complications.

LIMITATIONS

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

Forearm fractures are the most common fractures in children due to fall injuries. Open reduction is the standard treatment for bone arm fractures, but closed reduction and internal fixation with TENS seem to be a satisfactory treatment option for the fixation of pediatric bone fractures.

RECOMMENDATION

Large samples size with multicentre study is to be recommended.

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AUTHORS CONTRIBUTION

TFK-Conception, design, acquisition of data, drafting & final approval.
AJ-Acquisition of data, drafting & final approval.
MRH-Data analysis, drafting & final approval.
AD-Acquisition of data, drafting & final approval.
BKD-Data analysis, critical revision & final approval.
QUHC-Design, data analysis, critical revision & final approval.
AA-Interpretation data, drafting & final approval.
RBA-Interpretation of data, critical revision & final approval.
FH-Data analysis, critical revision & final approval.

DISCLOSURE

All the authors declared no conflicts of interest.

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Original Article

Marine City Medical College Journal

Nutritional Status of Under Five Children Attending Inpatient and Outpatient Department of Marine City Medical College and Hospital, Chattagram, Bangladesh

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ABSTRACT

Introduction: Nutrition status is always a neglected issue of public health and it is a major health problem in Bangladesh. It affect the physical growth and development of children. The study aimed to identify the nutritional status of under five children attending inpatient and outpatient departments of Marine City Medical College & Hospital, Chattagram, Bangladesh.

Materials and methods: This was a cross-sectional study. Anthropometric measurements and other data of 220 under 5 children were collected purposively during the period of July 2022 to September 2022.

Results: A total of 220 children were enrolled and analyzed. Table 1 shows the age and sex distribution of the study population, 50(22.73%) children were from the age range 12-23 months, and more than 20% were from the rest of the age range. In table 1, 120(54.55%) children were male and 100(45.45%) were female, the nutritional status by wasting, stunting and being underweight. Most of the 80 babies were from 1 year - <3 On the other hand, babies aged six months - <1 year were 31.

Conclusion: The prevalence of malnourished children in rural communities in this study was found very high out of them, underweight children were higher than wasted and stunted children.

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Key words: Malnutrition; Nutritional status; Under-five children.

INTRODUCTION

Malnutrition occurs when an organism gets too few or too many nutrients, resulting in health problems.[1] Specifically, it is "a deficiency, excess, or imbalance of energy, protein and other nutrients" which adversely affects the body's tissues and form.[2] Malnutrition is increasing in children under five to providers who cannot afford or give the child too big of a portion.[3] Severe malnutrition is a significant health problem among under-five children under five in Bangladesh and many developing countries and is associated with high morbidity and mortality.[4] Good nutrition allows children to grow, develop, learn, play, participate, and contribute, while malnutrition robs children of their futures and leaves young lives in balance. In developing countries, poverty is the essential socio-economic training for proper nutrition.[5] Bangladesh is one of the poorest developing countries in the world.[6] The high rate of child undernutrition in Bangladesh remains a significant problem despite a steady decline in recent years. In Bangladesh, 50% of babies have a low birth weight due to malnutrition of mothers.[7] The prevalence of undernutrition is highest among children under five.[8] Bangladesh, a very densely populated country, is one of the poorest developing countries in the world, more than three-fifths of its population are living below the poverty line. As a result of overcrowding, unemployment, poverty and poor access to adequate food as well as health services, infectious diseases and malnutrition are common in this society. It is noted that, increased morbidity among children living in poverty is strongly linked to malnutrition and an inadequate diet. PEM leads to disturbance in growth and increases morbidity and mortality rate and also decreases psychological and intellectual development.[9] Researchers have revealed that malnutrition leads to more severe infection and higher case fatality in Bangladeshi children and it is one of their major causes

of morbidity and mortality.[10,11] The government of Bangladesh, UNICEF, and the World Bank are collaborating to launch major projects designed to improve nutrition status of the nation and reduce childhood morbidity and mortality.The following year, an estimated 45% of deaths in children were linked to undernutrition.[12] The prevalence of wasting among children under five in South Asia was reported to be 16% moderately or severely wasted.[13] According to the Bangladesh Bureau of Statistics, 10.45% of people under five years of age are undernutrition.[6] Mortality and morbidity among poor children are increasing, strongly linked to malnutrition and an inadequate diet.[14] Three standard anthropometric indicators will assess the prevalence of malnutrition: underweight, stunting, and wasting, following the WHO guidelines and cut-off points.[15] The three leading indicators used to define undernutrition i.e underweight, stunting, and wasting, represent different histories of nutritional insult to the child. The study aimed to identify the Nutritional Status of under Five (<5) Children Attending Inpatient and Outpatient Departments of Marine City Medical College & Hospital, Chattagram, Bangladesh.

MATERIALS AND METHODS

This cross-sectional study was carried out during the period of July 2022 to September 2022 at Marin City Medical College and Hospital, Chattagram. Mothers of under-5 children were interviewed face-to-face using a semi-structured questionnaire. Weight was taken by using a portable Salter scale with a 125 kg maximum capacity. A portable Salter hanging scale with a 25 kg Maximum capacity was used for children less than 2 years of age who could not stand properly. Age was determined from the verification of the EPI card as well as history from the child's mother. Inclusion criteria:a height measuring stick was used for the measurement of the height of 2-5 years children and a length measuring board was used for measuring the length of fewer than 2 years' age children. Exclusion criteria in this study 0-6 months aged babies were excluded due to exclusive breastfeeding there were no nutritional defects.The socioeconomic status of the respondents was classified as ultra-poor, poor, lower middle class, middle class, upper middle class and rich according to the guideline of Gonoshasthaya Kendra (GK) a local NGO in Bangladesh. Weight for age (Underweight), weight for height (Wasting) and height for age (Stunting) were used as indicators for assessing the nutritional status of under 5 children. Nutritional status was classified by WHO criteria and Gomez classification. WHO criteria were used in terms of wasting and stunting where Z score < 3.00 is severe malnutrition, -3.00 to <-2.00 is moderate malnutrition and -2.00 to +2.00 is normal nutritional status.10 Gomez classification was used in terms of underweight where, weight for age <60% is severe malnutrition, 60%-75% is moderate malnutrition, 75%-90% is mild malnutrition and 90% is normal nutritional status. Before commence the study prior permission was obtained from the Institutional Ethical Committee.

RESULTS

A total of 220 children were enrolled and analyzed. Table I shows the age and sex distribution of the study population, 50(22.73%) children were from the age range 12-23 months, and more than 20% were from the rest of the age range. In Table I, 120 (54.55%) children were male and 100 (45.45%) were female. The socioeconomic status of the study is shown in Table II, most of the 45% of patients were from middle-class families, and only 20(9.09%) patients were from upper-class families. More than 90% of patients had a family with 1-5 members, and 20(9.09%) patients had a family with 6-10 members. According to the parent's occupation status, 140 (63.64%) parents were businessmen, 50 (22.73%) parents were private job holders, and 30 (13.64%) patients were govt. employees. Figure 1 shows the association between major illnesses and it shows 54.55% of patients with ARI, 31.82% of patients with diarrhea and 9.09% of patients with other illnesses. Table III describes the nutritional status by wasting, stunting and underweight. Most of the 80 babies were from 1 year - <3 On the other hand, babies aged six months - <1 year were 31.

Table I Age and sex distribution of respondents (n=220)

Variables	Frequency Age range (Month)	Percentage
0-11	34	15.45
12-23	50	22.73
24-35	46	20.91
36-47	45	20.45
48-59	45	20.45
Sex		
Female	100	45.45
Male	120	54.55

Table II Socio-economic status of the study population (n=220)

Characteristic	Frequency	Percentage
	Socio-economic status	
Upper class	20	9.09
Middle class	100	45.45
Lower middle class	70	31.82
Lower class	30	13.64
	Family Member	
(1-5) Person	200	90.91
(6-10) Person	20	9.09
	Parents Occupation	
Businessman	140	63.64
Private	50	22.73
Govt.	30	13.64

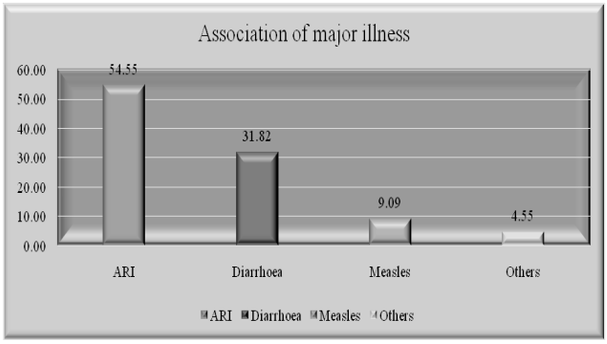

Figure 1 Association of major illness (n=220)

Table III Nutritional status by wasting, stunting and underweight (n=220)

Malnutrition	n	%	n	%	n	%
	6 months - <1 year					
Indicators	Wasting (n=31)		Stunting (n=31)		Underweight (n=31)	
Moderate	11	35.48	8	25.81	10	32.26
Severe	10	32.26	4	12.90	8	25.81
Good	10	32.26	19	61.29	13	41.94
	1 year - <3 year					
Indicators	Wasting (n=80)		Stunting (n=80)		Underweight (n=80)	
Moderate	30	37.50	25	31.25	20	25.00
Severe	22	27.50	15	18.75	25	31.25
Good	28	35.00	40	50.00	35	43.75
	3 years - <5 years					
Indicators	Wasting (n=50)		Stunting (n=50)		Underweight (n=50)	
Moderate	15	30.00	10	20.00	10	20.00
Severe	15	30.00	10	20.00	25	50.00
Good	20	40.00	30	60.00	15	30.00

DISCUSSION

In our study, 6.37% were severely wasted (male 6.1% and female 6.7%), and 14.39% were wasted (male 14.8% and female 13.9%). These figures were higher than those reported in the Bangladesh Annual report. Similarly, these figures are higher than the rate in other studies done in Pokhara, Dolakha, Humla, and Ilam but lower than those done in Kathmandu and Eastern Terai.[16-21] This prevalence was comparable to 14.3% in Vietnam, higher than that of 11.1% in NW Ethiopia but lower than that of Ethiopia (16%) and North West Tanzania (17.8%).[22-25] The severely wasted population in this study was 6.36% which is higher than that in the Philippines.[26] The findings revealed that stunting and severe stunting were lower in children under five compared to the National health survey report, 2016. In 2016, more than half of all stunted children under five lived in Asia (56%). Globally, stunting is declining too slowly. The small population in 2000 was 198.4 million (32.7%), which decreased to 154 million (22.9%) in 2016. In Asia, stunted children under five have decreased from 133.9 million (38.2%) to 86.5 million (23.9%).[27] Global estimates of the stunted under-five population were 22.9% (154.8 million in 2016), 56% of whom resided in Asia.[27] These findings suggest that children in the capital city have a better nutritional status than other parts of the country. Stunted under-five children in our study were much lower compared to other areas of the world like Ethiopia (57.5), the Philippines (34%), North Vietnam (29.8%), NW Ethiopia (24.9%), and Thailand (19.9%).[22,23,26,28,29] Overweight children are increasing at an alarming rate globally. Half of all overweight children under five lived in Asia (49%), and one-quarter lived in Africa (24%). The overweight population was 30.4 million (5%) in 2000, which increased to 40.4 million (6%) in 2016.[27] This study also shows that the number of overweight children is increasing. Overweight and obese children in this study were 2.8% and zero, respectively. This was low compared to 6% (40.6 million) overweight children under five globally.[27] A study in Thailand showed 8.3% obesity, and another study in NW Ethiopia showed 35.5% overweight children under five.[22,29] The underweight under-five population were lower in this study than in other countries like Thailand (27.8%) and Ethiopia Tigray (37.4%).[24,29] Nevertheless, it was also similar to the prevalence in NW Ethiopia (14.3%) Bangkok (5.74%) and the Philippines (21.2%).[26,28,29] Anaemic children slightly decreased from 48% in 2006 to 46% in 2011.

Though the rate of anaemia was low in this study, the need for government-level iron prophylaxis programs for children should not be underestimated. In this study, there was no statistical significance between various anthropometric values with gender and with individual morbidity studied. However, there was a significant association between acute and chronic conditions with weight-for-height ($p < 0.001$) and height-for-age ($p < 0.001$). Abnormal values tend to be more frequent among children with chronic conditions. This would suggest that common chronic conditions are associated with the nutritional status of children under five and these have to be identified and treated timely to improve the quality of life of these children.

LIMITATIONS

Every hospital-based study has some limitations and the present study undertaken is no exception to this fact. The limitations of the present study are mentioned. Therefore, the results of the present study may not be representative of the whole of the country or the world at large. The number of patients included in the present study was less in comparison to other studies. Because the trial was short, it was difficult to remark on complications and mortality.

CONCLUSION

In our study, significant number of under-five children was malnourished. Considering various socio-demographic characteristics like maternal factors, paternal factors, socioeconomic status, and residential status had significant association with nutritional status of the children.

RECOMMENDATIONS

There is a need to plan strategies and preventive public policies based on these specific risk factors to alleviate early malnutrition.

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AUTHORS CONTRIBUTION

MSU-Conception, acquisition of data, drafting & final approval.

BRM-Design, interpretation of data, critical revision & final approval.

BAS-Data analysis, drafting & final approval.

LA-Acquisition of data, data analysis, drafting & final approval.

MAIY-Interpretation of data, drafting & final approval.

USA-Acquisition of data, drafting & final approval.

DISCLOSURE

All the authors declared no conflicts of interest.

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Case Report

Marine City Medical College Journal

Sacroiliac Joint Tuberculosis Treated Conservativly

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ABSTRACT

Background: Tuberculosisi s a major public health problem in developing countries like Bangladesh. Osteoarticular tuberculosis represents 2% to5 % of all cases of tuberculosis, where sacroiliac joint is involved in 3-9.7%. Due to nonspecific clinical presentation tuberculous sacroilitis is rarely reported. So sacroiliac joint infections represent a diagnostic dilemma.

Case presentation: A 56 yrs. female presented with pain and swelling over right buttock for 2 months with low backache, limping gait and constitutional symptoms like low grade fever, anorexia. Clinical diagnosis of sacroiliac joint infection includes a thorough history and a meticulous examination of the lower back and the sacroiliac joint. Tuberculous sacroiliit is should be differentiated with various disorders. After confirmation of diagnosis with support of clinical features and blood reports. ATT drugs were given with proper duration and doses in follow up with serial X-rays and blood tests were done.

Conclusion: The prognosis of sacral tuberculosis is good, if a rapid and correct diagnosis is made and adequate treatmentis provided with proper duration and drugs doses.

Key words: ATT; Osteoarticular tuberculosis; Sacroilitis.

INTRODUCTION

In many parts of the world, Tuberculosis is still a growing health problem particularly in developing countries like Bangladesh. The incidence of spinal TB with neurological involvement is between 12.5-100% and it commonly leads to neurological sequel if not treated sufficiently. Spinal TB is especially responsible for 13% of all TB cases and accountsfor 40% of spine inflections.[1]

Tuberculosis can affect any bone and joint structures of the body. Osteoarticular tuberculosis represents 2% to 5% of all cases of tuberculosis and 11% to 15% of extra pulmonary tuberculosis.[2] The sacroiliac joint is involved in 3–9.7%. Isolated tuberculosis of the sacrum is rarely reported, which leads to a delay in diagnosis and subsequently persistence of a normally curable disease.[3]

Sacroiliac joint is mostly involved in conjunction with spine or hip. Sacroiliac joint is a true synovial joint and is subjected to infection as any otherjoint. The disease may start from lateralmass of sacrum, ilium or synovial membrane. Bilateral involvement is not uncommon and isolated sacroiliac involvement is further rare.[4] It usually presents as vague back pain. Plain radiographs are often inconclusive.

Due to rarity of lesion, vague symptoms and non-conclusive X-rays, the diagnosis is often delayed and it is not unusual to see that patients are being treated with physiotherapy and anti-inflammatory drugs for long time. The natural history of sacroiliac tuberculosis is bony ankylosis.[5] Sacroiliac joint infections represent a diagnostic dilemma for their vague and nonspecific clinical presentation.[3] We here present a patient of isolated sacroiliac tuberculosis

CASE PRESENTATION

A 56 years female presented on 10-11-2022 at Marine City Medical College and Hospital, Chattogram with pain and swelling over right buttock since 2 months with low backache, limping gait and constitutional symptoms like low grade fever and anorexia. Pallor was present. In Past history she had no other medical illness. On examination patient is conscious and cooperative, vital signs included BP 120/80 mmHg, HR 86 b/min, back pain aggravated at night and radiates to right buttock. Swelling and tenderness was present over right buttock and posterior aspect of hip Joint.

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Patient's investigations profile reveled complete blood count (Hb%: 9.2 gm/dl, RBC-Microcytic, Hypochromic, WBC-normal, Platelets -adequate) Haematology blood for ESR (76mm in first hour) CRP (97mg/dl) was raised. Mantoux skin test was negative.
X-ray Chest revealed no abnormality. In MRI of right hip right sacroilitis (Figure-1) with extension of the lesion into the adjacent iliopsoas muscle with minimum abscess formation was found.

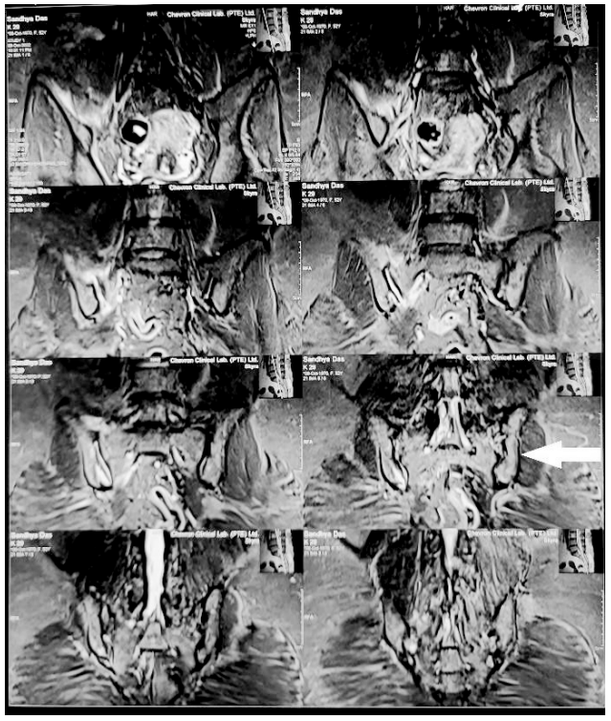

Figure 1 MRI of Hip Joint showing Sacroilitis of Rt Hip Joint

DISCUSSION

Spinal location at the thoracolumbar spinein 80% of cases. Isolated tuberculosis of the sacrum is rarely reported in the literature with a frequency estimated at 5% by Pertuiset etal.[1,2,6] In a review of 63 cases of spinal tuberculosis by Lindahl et al, sacral involvement was found in just four cases, while none was involved in107 patients in the series of Life so et al.[7,8]
Spinal tuberculosis is often due to hematogenous spread of mycobacteria from primary foci in the lung and/ or genitourinary tract. It is widely believed that the paravertebral venous plexus of Batson provides the primary pathway for dissemination of the tuberculous bacilli into the vertebral column. It is also possible that lymphatic drainage of the pleura or kidney may involve the para-aortic lymph nodes, which may secondarily involve the vertebrae.[9,10,11]
Clinical manifestations of sacral tuberculosis depend primarily on the age of the patient. Presenting symptoms and signs of sacroiliac tuberculosis 3 are often insidious and localized to that joint. Pain is the most common initial symptom.[12] Because of its location deep in the pelvis, most of the classical signs of a peripheral joint inflammations swelling, redness and warmth-are not present so that infection may easily be over looked.[13]
The most common presenting complaint of spinal TB is back pain. Other associated symptoms include tenderness, stiffness, muscle spasm, kyphosis from progressive bone destruction and cold abscess.
These symptoms tend to progress gradually, with average illness duration ranging from 4 to11 months. Buttock pain is invariably present in tuberculous sacroiliitis. The sacroiliac pain can be referred to the groin, posterior thigh and occasionally below the knee, mimicking pain originating from the lumbar spine, the hip and the lower abdominal quadrant.
Routine laboratory tests such as elevated ESR and CRP are not significant in the diagnosis of tuberculosis, but are considered useful in the assessment of the response to anti-tuberculous therapy. The ESR of the current patient was significantly higher than normal, suggesting pyogenic infection.
Currently, multi-agent anti-tuberculous chemotherapy is used is the treatment of choice for tuberculosis. In the present patient, to treat the sacroiliac joint lesion conservatively. The patient had an excellent outcome, according to the healing criteria of Kim et al. Analogous response to either conservative or surgical treatment has also been reported. Recurrences are generally not anticipated.
After confirmation of diagnosis ATT drugs were prescribed for 18 months with serial X-rays and blood tests. The prognosis of tuberculous sacroilitis is good, if a rapid and correct diagnosis is made and adequate treatment is provided.

LIMITATION

Ultrasonography guided FNAC was suggested but due to minimal collection the procedure could not be underwent.

CONCLUSION

So, it is rare case at rare site, Sacrum with reactionary sacroiliac joint tuberculosis. A clinical diagnosis of sacroiliac joint includes a through history and medical examination of lower back pain and the sacroiliac joint. After confirmation of diagnosis with clinical feature, blood reports and ATT drugs were prescribed for18 months and follow up serialx-rays and blood tests were done after 1 month, the progression of sacral tuberculosis is good because of rapid and correct diagnosis is made and adequate treatment is provided with proper duration and drug doses.

RECOMMENDATION

Proper medication and long duration of the treatment should be monitored strictly.

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AUTHORS CONTRIBUTION

MMR-Conception, citing references, drafting & final approval.
AAK-Design, critical revision & final approval.
AM-Citing references, drafting & final approval.
NI-Citing references, drafting & final approval.

DISCLOSURE

All the authors declared no conflicts of interest.

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MARINE CITY
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Marine City Medical College is affiliated under Chittagong Medical University & approved by the Ministry of Health & Family Welfare, Government of People's Republic of Bangladesh. A very good number of academicians, researchers and skill professionals are performing in this institute.

Marine City Medical College inaugurated to publish a double blinded, peer reviewed scientific journal from April 2022.

The "Marine City Medical College Journal (MCMCJ)" is a half yearly published eg. April & October accorded with a view to translation of current research into clinical practice. It is the official publication of the Marine City Medical College.

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