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Ethical Issues in Biomedical Research

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Ethics is defined "A Science of Morals" a branch of Philosophy[1]. It is concerned with what is morally good or bad and what is morally right or wrong. In our medical science we are concerned with Bioethics or Medical ethics or Research ethics. It is a set of norms (Honour your patient, don't kill) values (Such as honesty, openness, fairness, accountability and stewardship) and principles intended to govern medical ethical conduct.

There is a very subtle difference in between these three disciplines. Bioethics deals with theoretical ethical issues and concepts surrounding all biomedical technologies such as cloning, stem cell therapy, xenotransplantation and use of animals in research. Medical ethics is more specific and focuses on medical treatment of humans in particular. Research ethics deals with moral principles that guide researchers to conduct and report research without deception or intension to harm the participants of the study or members of the society as a whole, whether knowingly or unknowingly[2].

Areas of Medical Ethics[3]

There are four areas of applying medical ethics :
i)   Hospital ethics
ii) Ethics in private chambers
iii) Clinical research ethics
iv) Ethics in public health.

There are five morals such as
i)   Adherence to ethical guidelines in presenting manuscript
ii) Plagiarism free
iii) No unverified data

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iv) Authentic and error free research and
v) Gaining credibility and support from public.

Importance of Research Ethics

- To conduct and report research (Dissertation)
- No intention to harm patient and thereby stay away from any legal punishment (Medical ethics)
- To get plagiarism free manuscript with ethical standard
- To avoid scientific misconduct.

Principles of Research Ethics

Actually research ethics include all basic principles of medical ethics besides the following three in addition.

- Principle one : Minimizing the risk of Harm to participants
- Principle two : Obtaining Informed consent of subjects
- Principle three : Protecting anonymity and confidentiality of participants.

Basic Principals of Medical Ethics[4,5]

There are six principles of medical ethics:-
i)   Autonomy
ii) Justice
iii) Beneficence
iv) Non-maleficence
v) Confidentiality
vi) Truth telling.

Description of basic principles of Medical ethics :-

Autonomy

- Right of patients to make of decisions about their medical care

- Health care providers may educate the patient but can not influence their decision

- Protection of person with impaired or diminished autonomy (Vulnerable persons)

- Respect for person during informed consent process.

Justice
- Literally means Moral or Absolute Rightness
- Refers to the ethical obligation to treat each person in accordance with what is morally right and proper, to give each person what is due to him or her
- Recruitment and selection of research participants should be done in an equitable manner
- It should be responsive to their health needs and priorities.

Beneficence
- Maximize possible benefits
- Minimize harms or wrongs
- Risk of research justified by experimental benefits
- Sound design
- Competent investigator (s).

Non-Maleficence (Do No Harm)
- Guard against avoidable harm to research participants.

Confidentiality
- Researcher knows the identity of a research subject but takes steps to protect the identity from being discovered by others
- All of the collected information will be kept in secret (Locked and secured)
- Collected data will be used only for research purpose
- By no means those information would be exposed to third party even co-workers, friends and family members
- If needed to supply to legal authority prior consent from subjects is to be taken
- If needed to expose to other research groups, a data transfer agreement or material transfer agreement is to be signed.

Truth Telling[6]

The right of patients or their families to receive information about their diagnosis and illness. It should be shared in sensitive manner and described in appropriate chunks.

Truth Protocol (Buckman)

Robert Buckman Has outlined a six step protocol for breaking bad news
i) Picking a good time and setting and assemble right people
ii) Finding out how much the patient already knows
iii) Finding out how much the patient Wants to know
iv) Sharing the information the patient seeks
v) Responding to patient's feelings and
vi) Planning and follow -through.

Vulnerable Subjects[7]

Some groups of subjects are vulnerable. They cannot safeguard their interest (Informed consent or refusal) in research due to coercion or undue influence. They may be included in research by protecting them at least by taking informed consent and doing minimum risk with approval of Institutional Review Board (IRB). Examples are
i) Insane person
ii) Children/Neonates/ Human fetuses
iii) Pregnant woman
iv) Elderly persons (Alzheimer's disease)
v) Terminally ill/comatose person/Intoxication
vi) Persons of diminished autonomy (Diminished intellectual power)
vii) Ethnic minorities / Refugees
viii) Student / soldiers/Prisoners.

Metamorphosis of Ethical Code of Conduct[8,9]

Ethical code of conduct has undergone some amendment
- HIPPOCRATIC OATH (Bet fifth and third centuries BC) : Mainly focuses on Confidentiality and Non-maleficence
- Revised oath [Declaration of Geneva drafted by World Medical Association (WMA) in 1948] : It is the Medical ethics in general and over the world
- Change in oath in 2019 (It included "Protection of the environment which sustains us").

Breaking the oath is a medical malpractice. Important Documents contributing to medical ethics are

i) Thomas percival (1803)
ii) Nuremberg Code (1947) including 10 point code including beneficence, non-malificence. Informed consent and absence of coercion
iii) Declaration of Helsinki (1964) by world medical association which is the cornerstone document on human research ethics.

Two important landmarks trials in the history of medical ethics are Roe vs Wade (1973) regarding abortion and Development of haemodialysis (1960).

Fundamental principal of Helsinki declaration
- Respect for the individual (Article 8)
- Right to self-determination and right to make informed decisions (Article 20, 21 & 22) regarding participation in research, both initially and during the course of research
- Thorough knowledge of scientific back ground (Article 11)
- Careful assessment of risks and benefits (Article 16,17)

● Reasonable likelihood of benefit to the population studied (Article 19)

● Suitably trained investigators (Article 15).

Citation by International Organizations

International Organization alsodeclares universally for human right in their documents. To give the Universal Declaration of Human Rights, the General Assembly of the UN adopted in 1966 utters in a Article 7: "No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment. In particular, no one shall be subjected without his free consent to medical or scientific experimentation". It is also cited in article 7 of 52nd WMA declaration of Helsinki. Now most of the researchers may require certificates of "Good Clinical Practice (GCP)".

Unethical Practices in Research

The followings are beyond norms during conducting a research

i) Discussing with our colleagues regarding confidential data

ii) Failing to keep good research records

iii) Making a significant variation from the research protocol approved by IRB & Scientific Review Committee (SRC)

iv) Not reporting an adverse event in human research experiment

v) Wasting animals in research

vi) Exposing research participants to biological risks.

Ethical Standards for Research[10]

A research work should avoid the following misconducts

i) Plagiarism: It is unethical practice of using wards or ideas of another author or researcher or your own previous works without proper acknowledgement

ii) Fabrication : Synthesis of data that were not conducted

iii) Falsification : Manipulating, changing or omitting data of other researches (Fraudulent manipulation)

iv) Salami article (Same study, same hypothesis, methodology and result with segmented publication)

v) Submission of same article to two journals.

Identification of Fake Journals

A researcher during search of other's previous works on same topic nationally or internationally has to gather knowledge by going through their published works.

During the process the investigator has to

● Look at carefully what is the publisher of the journals

● Investigate who are the editor-in-chief, senior editors and the reviewers of the journals

● Identify how many volumes and issues that the journals have published

● Investigate the review processes

● Find out Impact factor.

Ethical Clearance[11]

Ethical Clearance Certificate is obtained from Ethical Review Committee which is Known as IRB.

It is composed of mixed group of people (Odd number) and should include Scientist, Social worker, Layman, Legal advisor, Politician, Religious leader, Journalist and A representative from female (Gender issues).

To obtain ethical clearance the investigator has to submit protocol according to IRB or Ethical Review Committee (ERC) format

i) Clarification of ethical issues

ii) A check list

iii) Special information for experimental study (Ex drug)

iv) Informed consent

v) Document of Voluntary participation

vi) Procedure of Confidentiality and process of precaution to maintain anonymity

vii) Investigation of costs.

Consent Taking from Subjects

Consent which is fully informed it is informed consent. Consent is not apiece of paper, it is a process. The purpose of informed consent is to protect the patient, not for benefit of patient. The patient will give the consent, not the doctor. The signature on the form is informed consent

There are 3 types of consent

i) Implied Consent : Your agreement is given by cooperating with a healthcare professional's instructions for routine procedures. Examples of implied consent include when you extend your arm for a blood sample, take and swallow medication that is given to you, or attend an appointment to receive information or advice for the management of your condition.

ii) Verbal Consent : Your agreement is given verbally for a treatment or procedure that doesn't carry a significant risk.

iii) Written Consent : Your agreement is given by signing a document for a treatment or procedure that is complex or carries a higher risk.

During research work one of written consent is informed consent. It is rightly mentioned in International Organizations of Medical Sciences (CIOMS) Guideline no-4 (CIOMS, Geneva 2002):

● For all biomedical research involving humans the investigator must obtain the voluntary Informed Consent (IC) of the prospective subject or in the case of an individual who is not capable of giving IC, the permission of a legally authorized representative in accordance with applicable law.

● Waiver of IC is to be regarded as uncommon and exceptional, and must in all cases be approved by an ethical review committee. (Chart review study/retrograde cohort study) CIOMS is endorsed by WHO and UNESCO[12].

Informed Consent[13]

● One of Founding principles of research ethics

● Its intent is that human participants can enter research freely (Voluntarily) with full information about what it means for them to take part

● The participants will give consent before they enter the research

● The participants who are not capable of giving informed consent, it can be taken from legally authorized guardians (Proxy consent).

Time of Informed Consent

● It is signed before enrollment in a study

● It continues throughout the study

● The participant may ask questions of the researcher at any time before, during, or after the study

● It is often helpful to discuss the study and the informed consent documents with family members or friends before deciding whether to participate.

Components of Informed Consent

● The patient must have the capacity (Or ability) to make the decision

● The medical provider must disclose information on the treatment, test or procedure in question, including the expected benefits and risks and the likelihood (Or probability) that the benefits and risks will occur

● The patient must comprehend the relevant information.

● The patient must voluntarily grant consent, without coercion or duress.

Contents of Informed Consent[14]

i) Information sheet includes Title of the study, Investigator's name, Institution/organization, Purpose and nature of study, Selection of the participant, Expectation from and involvement of the patient, Risks, Benefits, Principal of compensation, Privacy, autonomy and Confidentiality, Policy Sharing the Results and Right to Refuse or Withdraw (Voluntary participation).

ii) Consent Form : It includes

● Title of the study

● Investigator' name

● Name of Institution/ Organization

● Pt's statement of understanding the information

● Particulars of the patient

● Pt's signature and his witness

● Investigator's signature and his witness.

Special Information for Experimental Study (Drug)

● Information on the Trial Drug [Name of Drug]

● Researcher has to mention the phase of the trial and explain what that means. Explain to the participant why He is comparing or testing the drugs

● All appropriate information must be mentioned-manufacturer, location of manufacture, reason for its development etc

● The known experience with this drug is to be explained

● All known side-effects/toxicity of this drug should be explained comprehensively.

Check List

Source of population

● Ill subjects

● Non ill subjects

● Minor or persons under guardianship

Does the study involve

● Physical risks to the subjects

● Social risks

● Discomfort to subjects

● Invasion of privacy

● Disclosure of information damaging to subject or others

● Use of organ/body/abortus/fetal tissue

● Use of records.

Are subjects clearly informed about

● Nature and purposes of study

● Procedures to be followed including alternatives used

● Private questions

- Invasion of the body
- Benefits to be derived
- Right to refuse to participate or to withdraw from study
- Confidential handling of data
- Compensation where there are risks or loss or working time or privacy involved in any particular procedure.

In fine, research ethics is about a good clinical practice when enrolling study population, engaging with them and dealing with their data. The investigator has the sole responsibility to conduct the study ethically in all phases. He has to maintain especial responsibility when dealing with vulnerable subjects.

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COVID-19 Pandemic : Impacts on Children with Autism Spectrum Disorder and Their Families

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ABSTRACT

Background : The COVID-19 (Coronavirus Disease 2019) is affecting 213 Countries and territories arround the world and 2 international conveyances in the twentieth century.

World Health Organization (WHO) declared the COVID-19 as public health emergency of international concern in January 2020 and declared it to have developed pandemic status children with Autism Spectrum Disorder (ASD) may have great difficulties when their routines change and this may affect the psychological well beings of their families.

This review article aims to explain the impacts of COVID-19 on the children with ASD and their families in Bangladesh in relation to global perspective.

Methodology : This current study is a narrative review of published studies and articles by using PubMed, Google and Daily Newspaper. Structured search strategy using appropriate keywords and title.

Conclusion : In this systematic review it is concluded that the COVID-19 pandemic negatively affected the mental health of children with ASD and their families.

Key words: Autism spectrum disorder; COVID-19 Pandemic; Family impact; Individual.

INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder marked by impaired social communication and social interaction accompanied by atypical patterns of behavior and interest. As defined in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) ASD is differentiated from other developmental disorders by significant impairments in social interaction and communication, along with restrictive, repetitive and stereotypical behaviors and activities. Features of ASD can include a lack of reciprocal social interaction and joint attention (i.e the ability to use nonverbal means such as pointing to direct others' attention to something in which the child is interested) marked impairments in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression and gestures to regulate social interaction, restricted repetitive and stereotyped patterns of behavior, interests and activities, such as apparently inflexible

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adherence to specific, nonfunctional routines or rituals, stereotyped and repetitive motor mannerisms, intense preoccupation with particular concepts or things and atypical sensory processing. Many children with ASD may also have impaired cognitive skills.[1] Among the difficulties associated with Autism Spectrum Disorder (ASD) are those related to adaptation to changes and new situations, as well as anxious depressive symptoms frequently related to excessive environmental requirements.[2]

Autism and other neurodevelopmental disabilities are going up day by day.A recent 2013 pilot study in Bangladesh, utilizing community health works has found prevalence of all kinds of neurodevelopmental disability is 7.1%, whereas, for ASD, the study indicates a prevalence of 0.15 % (3% in Dhaka city and 0.07% in rural area.[3,4] Existing literatures reported about 2 to 8.4 children per thousand are suffering from Autism Spectrum Disorder in this country.[2,3] The Social Welfare Ministry has identified & prepared a database upto2020 near about 22,04,733 people in Bangladesh who are differently abled including those with autism. In the database near about 56,900 has been identified with ASD.(Disability in Bangladesh-Bangladesh Bureau of Statistics).

Autism Spectrum Disorder (ASD) currently affecting one in 54 children as reported by the Centers for Disease Control and Prevention (CDC).[5] Considerably more males (1 in 54) than females (1 in 252) are affected.

Among the developing countries Bangladesh is making a remarkable contribution in autism awareness and the country has already established herself as the role model for the low and middle income countries.[1]

Every Child is unique but children with ASD tend to love structure and they generally thrive when their days stay close to the same as the day before, so a lot of children are going to be thrown for a loop during this pandemic. Most families that have a member with ASD have been directly impacted by the corona virus pandemic. Coping with the anxiety and uncertainty since March-2020 that we are feeling during this time is something all parents will need to address with their children. For many children with ASD and their families the transition from a structured daily schedule in home, school or communilty programs to extended unstructured time at home is very very challenging. The challenges and increase burden for parents of ASD individuals during this pandemic having to cope with their own and others'needs during this exceptional time.This reflects how vulnerable this population is and the importance of the role parents in ensuring the wellbeing of ASD individuals. Although support is needed on a regular basis, the COVID-19 pandemic increases the family support needs of individuals with ASD in such uncertain times. Policy makers must address this issue to fulfil the family and individual requirements having a child with ASD.[1-6]

World Health Organization declared SARS CoV2 or Coronavirus Disease 19 as a global pandemic and alarmed the lower-middle-income countries to have a greater risk of transmission.Bangladesh confirmed the first case on March 7, 2020.[2] The country also reported the first case of a child who died aged six years on April 13.2020 in Chattogram. She was a physically challenged child with cerebral palsy.[4] Bangladesh has nearly 10-15% of people with disabilities and 80% of them living in rural areas and disability has been defined by Persons with disabilities rights and protection Act (2013) and neurodevelopmental disability protection trust act (2013) as physical, psychological, visual, speech, intellectual, hearing, cerebral palsy, autism spectrum disorder and down's syndrome.[6] For many reasons, the Persons With Disabilities (PWD's) particularly with autism are at higher risk of COVID-19 in Bangladesh. This review highlights some of the specific challenges faced by individual with Autism Spectrum Disorders (ASD) and their families. In Bangladesh though government has taken so many initiatives on livelihood of individual with disability including autism in particular, even than individuals with ASD and their families have been affected across several domains, including educational, vocational, home and leisure activities, behavioural problems and it's management, health services, maintenance of pandemic related health instructions because of sensory issues. Mental stress, etc. The full effect of this pandemic -has yet to be determined. However it is clear that individual with disabilities have already faced significant challenges during this pandemic.[2,4]

SEARCH STRATEGY

The search processes for this systematic review were conducted between May 2020 and October 2021 to include the latest publications in the publication process. The search procedure was achieved by browsing the PubMed, Google (2005-2021) and Daily Newspaper. Key search topic were "COVID-19 Pandemic : Impacts on Children with Autism Spectrum Disorder and Their Families". The list of references of the included studies was reviewed to access additional studies. The search term were following key words used in various combination : Autism spectrum disorder; COVID-19 pandamic; Family impact; Individual.

DISCUSSION

Impacts of COVID 19 Pandemic on Autism

The COVID19 pandemic has caused significant fear and uncertainty around the world and had significant psychological impact. Children, adolescent and adult with ASD are a particularly vulnerable population, impacted by "Stay at home" orders closures at non essential services and social distancing standards.[7]

In general children are resilient to SARS-CoV-2 infection. Children with neurodevelopmental disability are at increased risk for several reasons including comorbid condition, the reliance on caregivers for care, potential difficulty adherence to public health measures. They were found to be increased risk of COVID 19. A disruption in services, therapies or medical supports due to COVID 19 pandemic left most caregivers in moderate to severe stress and burden.[8]

Autism and Increased Vulnerability

The World Health Organization (WHO) defines vulnerability as "The degree to which a population, individual or organization is unable to anticipate, cope

with, resist and recover from the impacts of disaster" (WHO, 2002). The COVID-19 pandemic has a wide-spread effect on the society around the world because of isolation, lockdown, curfew or quarantine. Although the isolation and quarantine enforcements restrict individual liberties, quarantine is essential as one of the most effective public health measures for controlling outbreaks.[9] 'Stay home' or 'stay-at-home' has become a worldwide motto/mantra during the quarantine associated with the COVID-19 pandemic (CDC, 2020a, WHO, 2020). This means isolation or separation from society and environment for all people including families of children with ASD. Quarantine or lockdown restrictions associated with this outbreak impact personal and family life because people must stay at their home or in a place designated for this task by following specific rules. Therefore, these fundamental changes in social life may lead to short-term or long-term effects on individual and family functioning during the quarantine. The catastrophic or uncertain atmosphere may impact all aspects of parental perceptions of families who have children with ASD about the COVID-19 pandemic all over the globes including Bangladesh.[4,10]

Impact of COVID-19 Pandemic on the Autism Community

Mitigation strategies to contend with the threat of COVID-19 have been put in place across the globe, many of these strategies (e.g Stay-at-home orders, social distancing) left individuals with disabilities without access to critically needed services and supports resulting in even greater vulnerability. Immediate impacts of this pandemic have been felt first-hand by individuals with ASD, their families, caregivers and other natural supports as well as the professionals that work with them. These families utilize multiple services and providers for the educational, vocational and functional needs of their children.[11]

Adults with ASD may rely on community-based service providers to help them achieve their self-determined community participation goals. Often, these services are best delivered in situ, as evidence has shown that many individuals with ASD struggle with generalization and learn best inthe context in which the skill should be performed.[12] This means that activities of daily living would be taught with support in the home, community skills in the community and educational and vocational tasks onsite. Stay-at-home and

shelter-in-place orders, closures of community locations and nonessential health services and social distancing standards left parents, caretakers and other natural supports attempting to cover the majority of service needs under severely curtailed options and professionals struggled to offer their services from a distance.[2,4,10,13]

Education Challenges

In the beginning of the pandemic course, all the educational institute have been abruptly closed to mitigate the spread of infection before many distance learning modalities could be developed. Quickly adapting to distance learning posed a significant challenge for most educators when considering general education curriculum for students without learning disabilities or needs.This challenge is likely even greater for educators attempting to adapt special education related services for children with ASD and complex and/or communication needs. Over the course of the pandemic, many children with ASD have received minimal services such as speech and language therapy, occupational therapy and physical therapy.[13] Children who rely on having a routine in school–including the structured environment, familiar schedules and cues, potentially enhanced through supports of 1:1 instruction ora paraprofessional–are now being expected to academically perform in their homes in front of a tablet or laptop. These facilities are not applicable for all families in Bangladesh because of socioeconomic status.[2,4]

Furthermore, their educational challenges now needed to be supported by their parents or caregivers, who may have been additionally trying to care for other members of the household. While most likely having great insight into their children's strengths and needs, parents may not have the required training and experience needed to effectively implement their children's education plans.The shift to completing school tasks with parents in their home environments surrounded by temptations of highly preferred activities are likely unfamiliar and challenging for many students. While operating and interacting with a tabletor laptop is probably familiar–and may represent a preferred activity when self-directed such as watching videos on You-Tube–to many children, interacting with a teacher and fully attending to virtual instruction would have been much less familiar. For children that use alternative communication,such as gestures or picture exchange, virtual interaction often requires a parent or additional

support immediately available to assist with communicating responses. Adapting to these challenges in and of themselves could require considerable time and effort. Then requiring parents and caregivers to additionally learn their child's educational programming and modifications and adaptations, deliver effective reinforcement strategies and develop a realistic and sustainable schedule to teach their child can make education delivery a truly herculean task. All these tasks are very difficult in Bangladesh perspectives.[2,4,10]

Vocational Challenges

Adult with ASD are at greater risk to experience increased social isolation lower community participation and decreased participation in social activities.[14] Many research has shown that adults with ASD across the spectrum face more unemployment and under employment compared to their neuro typical peers.[15] Many adults with ASD rely on support staff for transportation, management of work tasks and effective social engagement in the community.[16] With services interrupted, jobs fur loughed and community locations temporarily closed, adults with ASD may have been faced with sudden large amounts of unstructured time, few supports, and difficulties adapting to rapid change. Adults with ASD who live in group homes, attend offsite adult day services or live independently with supports may have moved to be with family members or caretakers as means of reducing risk of contracting COVID-19.[17] While this is important to maximize health precautions and minimize isolation, it also can contribute to feelings of reduced independence and greater sense ofroutine disruption.[18] Though employment opportunity yet very limited in our country for adults with ASD, a good number have been engaged in different workplace, either self employment or institutional employment. Regression with skills that have gone unpracticed for months may need additional time for retraining to become familiar and comfortable once again. Individuals with ASD as is true for all members of the community will need to cope with new restrictive procedures such as required mask wearing and occupancy limits. This may be particularly stressful as they re-engage with what used to be highly comfortable and familiar community activities and settings.[2,4,8,10]

Home and Leisure Challenges

Nearly all of us, as a result of limits on work, school and community access due to needed restrictions of non-essential activities, have experienced some increased unstructured time at home. This has resulted in challenges for many individualswith ASD who can struggle with executive functioning, which includes planning, organization, task initiation and self-monitoring.[19] Limitations in these skills make it difficult to alter routines, generate new ideas and independently incorporate them into daily schedules.In addition, many individuals with ASD have restrictedor fixed interests. While these interests may not cause difficulties when balanced with a variety of community opportunities, during periods of excess unstructured time and limited scheduled variability, it can be easy to become "stuck"in these highly preferred interests or activities.[20] These fixations, while comforting, may interfere with needed skills development and adaptations to cope with changing conditions. As schedules begin to normalize, it may be difficult to reallocate time to other important interests and activities. Children or adults with ASD who struggle with maintaining attention to tasks may have relied heavily on family members, caretakers or other natural supportsto help them occupy their unstructured time.[2,8,10]

Impact of Service Delivery

Individuals with ASD demonstrate high rates of service utilization and utilization costs compared to other disabilities.[21] Despite this, there is evidence highlighting significant unmet healthcare needs pre-pandemic: patient-level factors like challenges around appointments and sensory issues, providers-level factors including lack of ASD knowledge and training and system-level factors such as accessibility of health care facilities, which limit service and referral pathways.[10,22] Prior to shutdowns related to the COVID-19 pandemic, most dependents were reported to be receiving services, therapies or medical support in-person (91.0%). At that time, some caregivers reported administering therapies for their dependent at home (24.7%). Additionally, most services were received in school (73.0%) and clinical settings (62.7%) . Of those who were receiving services, many caregivers reported receiving services in a remote or online setting during the COVID-19 pandemic (69.7%). In this pandemic caregivers reported a decrease in access to all services. Most caregivers reported that their dependent's services,

therapies or medical care were moderately to severely disrupted (87.1%)(7). Caregivers reported a disruption in services, therapies or medical supports due to the COVID-19 pandemic. Furthermore, remote services, although the only option at the time, are not perceived beneficial for dependents by most caregivers. The disruption to dependent's services left most caregivers either extremely or moderately overwhelmed.[10] No such data's are yet available in our country, though many centers working for ASD individuals are trying to provide services by remote delivery.[4]

Behavioral Health Services

Access to behavioral health services has also been greatly impacted during this time. Outpatient and in-home services may have either paused or quickly converted to telehealth. Applied Behavior Analysis (ABA) is an evidence-based treatment for individuals with ASD including those with intellectual disabilities and/or complex communication needs.[23] However, these services are typically delivered face to face with providers in relatively close proximity to individuals with ASD using shared materials.Converting these services to remote delivery can be challenging as ABA frequently includes observation of behavior that is often beyond the reach of a video camera and requires support of another household member.Social distancing and other pandemic infection control mandates have resulted in great innovation and quick responsiveness in how services are delivered .The increased use of telehealth during this time presented unique opportunities and challenges.[24] While thereare many names for behavioral health services provided on virtual platforms (e.g Telehealth, telemedicine, teletherapy, telepsychiatry) the core common feature is that people inthe community are able to access health care professionals via a web-based system rather than an in-person encounter.Telehealth is not a new concept or practice for some behavioral health services and there is strong evidence supporting the efficacy, feasibility and patient preference of theseservices.[25,26]

The literature currently available on the efficacy of telehealth for individuals with ASD is mixed.[27,28] Telehealth has been well perceived by the youth with ASD and their parents. However, technical problems have been concerns in delivering these services.[27] Despite these bar remains a viable alternative for individuals with ASD when in-person encounters are not possible or feasible.Tele-services have potential for individuals

with ASD to providea variety of services such as individual therapy, family consultation, transfer of skills and skill maintenance and addressing behavior difficulties and communication needs.Health care, including behavioral health of all levels, adapted services quickly to meet the needs of the people they serve, though all these are very limited in our country for so many constrains.[4,8,10]

How to Cope with the Pandemic

Many of the essential services needed by individual with ASD have been impacted by the global COVID19 effects. Children with autism are generally prone to viral infections due to weak immunity and a child with autism may not tolerate a mask, isolation or a new environment, or an unfamiliar health staff. They would not communicate their bodily symptoms, physical needs and emotional requirements. Admitting these children to an in ward facility in the absence of a parent is virtually impossible. It is neither practical nor possible to ask the child to self-isolate or stay alone. Thus it is very important to keep the children safe during this pandemic. Every parent should carefully ensure their child's safety and help them grow immunity by eating healthy food and supplements after consulting with medical experts.[2,4,10]

During this situation, a family with a special child would prevent the child attending his/her daily routines outside home environment including attending special education classes, participating in recreational activities and enjoying their favorite form of entertainment. Disruptions in the daily schedule can be difficult for children with autism, so creating structure at home can make a huge difference. As much as possible, may follow previously established routines related to schedule wake-up and bed times, meals, breaks, etc. at the same time each day. A visual schedule will help the child understand the new structure of their daily routine at home. It is appropriate to include limited screen time within the daily schedule, but be sure to provide transition warnings and visual count downs when transitioning away from highly preferred activities. A lot of kids are now participating in at-home education, so making the home resemble the environment a child with autism is used to can help them feel more comfortable.[2]

During the day, it is important to handle play activities, listening to music or watching movie for a limited time could be considered okay for these children. Ideally,

individuals with autism have some coping and calming strategies in their repertoire of skills to access with support during their most anxious times. These may include rocking in a rocking chair, listening to music on head phones, deep breathing, watching a preferred video clip, brief periods of vigorous exercise or accessing a favourite activity or material. If coping or calming strategies are not yet part of the routine, caregivers can prioritize the teaching of these skills during this time of uncertainty. For example, logo-based play is an increasingly popular social skills programme for children and young people with autism. In addition, use tried and true ways that have worked previously for reinforcing the child's good behaviour and for following the rules. Fun activities, video games, snacks, late bedtime, etc can all be potential rewards. Make a bucket of rewards that the child can pick from. The element of surprise will add to the process and decrease the likelihood of boredom from using the same positive reward over and over. Catch your children being good. Praise them aloud. A little praise can go a long way.[2,8,10]

CONCLUSIONS

From this tudy it may concluded that the COVID-19 pandemic has negatively affected the mental health of children with ASD and their families. While many factors play a role in increasing the stress levels of their families, stress may also lead to different problems. In this case, it is possible for children with ASD to continue their lives in a healthy way with mentally healthy their families. In the systematic review, children with ASD and their families had difficulty with their children being at home all day long and financial difficulties as they had to quit their jobs. ASD's families were also able to devote less time to themselves during this process and their stress and anxiety levels increased.

RECOMMENDATIONS

During the pandemic where face-to-face services are interrupted, governments and relevant institutions should provide support to children with ASD and their families and institutions that provide support should also work to improve the quality of the support they provide. In this process, it may be recommended to research new ways such as online health monitoring, online diagnosis systems, support groups for children and their families increased tele-health services, tele-therapies and e-health support. Additionally, after the restrictions imposed by the pandemic are removed, it is important to support children with ASD and their families while they are getting used to their social lives. Support services, such as counseling and helplines, may be created to help ASD's families share their concerns and receive assistance in dealing with specific situations. ASD's families should be evaluated in terms of mental health and professional help should be provided for individuals who need support.

DISCLOSURE

The author declared no conflict of interest.

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Prevalence of Periodontal Disease among the Patients with Chronic Kidney Disease

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ABSTRACT

Background: Periodontal diseases can have a significant effect on the systemic health. Chronic systemic diseases such as chronic kidney diseases of different stages may also influence progression of periodontal disease. The present study assessed the prevalence of periodontal disease among a group of patients with renal disease and compared their periodontal status to that of healthy controls.

Materials and methods: 50 patients with different forms of chronic kidney disease and 50 healthy controls were examined for oral hygiene status, gingival inflammation, probing pocket depth and clinical attachment loss. The subjects were grouped into four as no, mild, moderate and severe periodontitis.

Results: Most of the periodontal parameters were significantly elevated in the case group as compared to controls ($p < 0.05$). The prevalence and severity of periodontal disease was also higher in the case group letter being statistically significantly ($p < 0.05$).

Conclusions: This study gives a snap shot of proportion of periodontal diseases in Chronic Kidney Disease (CKD) patients of different stages. It also provides information about degree of periodontal diseases in CKD.

GRAPHICAL ABSTRACT   *Prevalence of Periodontal Disease among the Patients with Chronic Kidney Disease*

Materials and methods	Results		
Cross sectional comparative study	Periodontal variable 🦷	Control group	Patient group
	DI-S		
Patient CKD : 50	CI-S → Periodontal disease	24/50	36/50
	MGI		p value = 0.014
	PPD		
Control No. Disease : 50	→ No. Periodontal disease	26/50	14/50
	CAL		

Conclusion : A greater prevalence and severity of periodontal disease among predialytic patients with renal disease.

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INTRODUCTION

Periodontal diseases comprises of a group of inflammatory diseases affecting the supporting tissues of the teeth resulting from a complex interplay of specific gram-negative microorganisms, their byproducts and the host-tissue response. This results in progressive destruction of the periodontal ligament and alveolar bone. Earlier, periodontitis had been considered as a

disease confined to the oral cavity. However, in the past several years, substantial scientific data have emerged to indicate that the localized infections characteristic of periodontitis can have a significant effect on the systemic health.

It is now recognized that the periodontopathic gram-negative bacteria and bacterial products, such as lipo-polysaccharides, activate the host immune response significantly and their actions have consequences beyond periodontal tissues. Pro-inflammatory cytokines, such as α_2-macroglobulin, α_1-antitrypsin and C-reactive protein are significantly elevated during the destructive phase of periodontitis.[1-3] These inflammatory mediators may have a profound influence in the pathogenesis of many systemic diseases.

During the past decade, numerous studies, mostly cross-sectional and few longitudinal, have been carried out and they provide evidence for the link between periodontal and cardiovascular diseases, like atherosclerosis and myocardial infarction.[4-6] Recently, several studies have been published in the literature, providing evidence for an increased prevalence of periodontal disease in patients with renal disease, especially in dialysis patients, and renal transplant recipients.[7-12]

However, conflicting results regarding the periodontal status of these patients are also available and further studies are warranted in this regard.[13-15] The aim of the present study was to know the prevalence of periodontal disease among a group of patients with chronic renal disease. Furthermore, we wanted to compare their periodontal status to that of healthy controls.

MATERIALS AND METHODS

This study was designed as a cross-sectional comparative study. Cases were identified from the patients attending the outpatient clinic at the Department of Nephrology, Chittagong Medical College, Chattogram, over a period of six months, from March 2019 to August 2019. Only patients who were diagnosed with renal disease were included. These diseases include chronic kidney disease of varied etiology. Systemically healthy individuals who accompanied patients during the same period were selected as control subjects.

Subjects who had previously underwent dialysis or renal transplantation were excluded from the study. Subjects with history of hepatitis, those who had received periodontal therapy or systemic antibiotic therapy within a period of six months prior to the examination and subjects with any acute condition that contraindicated a periodontal examination were also excluded.

To assess the periodontal status, all subjects were required to have at least six natural teeth.

The study was conducted by the joint efforts of the Departments of Nephrology, Chittagong Medical College, and the Department of Periodontology, Dental Unit, Chittagong Medical College. The study was approved by the Ethical Review Committee, Chittagong Medical College, Chattogram. A written informed consent was obtained from all participants in the study.

All subjects were required to answer a detailed questionnaire. The information collected included demographic characteristics like name, age, address, sex, occupation etc. A detailed medical and dental history was also collected from all subjects.

The dental and periodontal examination in all subjects was carried out by one of the authors. The dental status was determined by visual examination under direct and indirect illumination, using a plane dental mirror and a dental explorer. Oral Hygiene Index-Simplified (OHI-S) (Greene and Vermillion) was calculated for assessing the oral hygiene status.[16] The index was calculated using six index teeth: 16, 11, 26, 36, 31, 46. Modified Gingival Index (MGI) for the entire dentition were calculated as a measure of gingival inflammation.[17]

The periodontal examination was carried out with calibrated periodontal index probes with markings (Fig.1). The periodontal status was determined using measurements of Probing Pocket Depth (PPD) Gingival Recession and Clinical Attachment Level (CAL) measurements from four sites on each tooth (Buccal, mesial, lingual/palatal & distal). PPD was taken as the distance from the gingival margin to the base of the gingival sulcus / periodontal pocket. Gingival recession was measured as the distance from the cemento-enamel junction to the gingival margin on the root surface. These scores were then added up to indirectly obtain the values for CAL. The measurements were calculated using six index teeth: 16, 12, 46, 36, 41, 44.
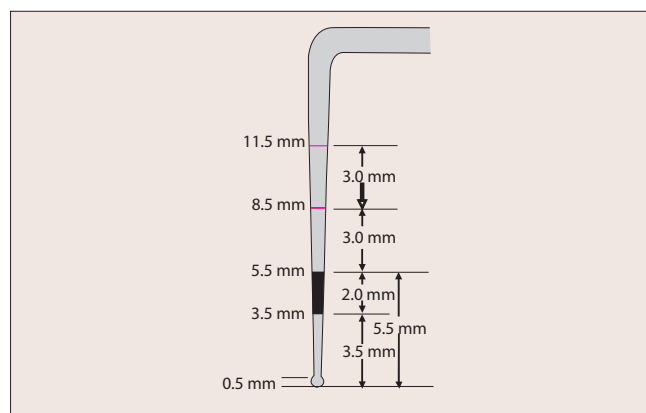

Figure 1 WHO community periodontal index probe

All the subjects were categorized into four groups (No, Mild, Moderate & Severe Periodontitis) based on CAL and PPD measurements, using the criteria proposed by the joint working group of the Centre for Disease Control and Prevention in collaboration with the American Academy of Periodontology in 2003 which are depicted in (Table I).

Table I Clinical case definitions proposed by the CDC Working Group for Use in Population-Based Surveillance of Periodontitis[18]

Category	Clinical Attachment Level (CAL)	Probing Pocket Depth (PPD)
Severe Periodontitis	≥ 2 interproximal sites with and (Not on same tooth) CAL ≥ 6 mm	≥ 1 interproximal site with PD ≥ 5 mm
Moderate Periodontitis	≥ 2 interproximal sites with or (Not on same tooth) CAL ≥ 4 mm	≥ 2 interproximal sites with PD ≥ 5 mm
No or Mild Periodontitis	Neither "moderate" nor "severe" periodontitis	

Variables studied

Independent variables (Cases)

Socio-demographic variables

Age, Sex, Marital status, Races, Socio-economic class (Education-Profession-Family income), BMI (Height & weight)

CKD related variables

eGFR & CKD staging, Types of CKD

Periodontal variables:

Debris index simplified (DI-S),
Calculous index simplified (CI-S)
OHI-S, MGI, PPD, CAL

Dependent variables (Periodontal status)

No Periodontitis
Mild Periodontitis
Moderate Periodontitis
Severe Periodontitis

Descriptive statistics including mean values for OHI-S, modified Gingival Index, PPD and CAL were calculated. For comparisons between the case and control groups, the Student's t-test and chi- square tests were used for quantitative and qualitative variables respectively. The difference in proportions in both groups was tested using chi-square test. All statistical analyses were carried out using Statistical Package for the Social Sciences package for Windows, Version 26. The 95% confidence intervals was considered as (p-value < 0.05) statistical significant.

Prior to the commencement of this study. The research protocol was approved by the IRB of Chittagong Medical College, Chattogram.

RESULTS

A total of 100 patients were included in the study (50 in each group). The mean age of patients was 43.02± 14.89 years. There were a total of 72 males and 28 females in the study. The group wise distribution of age and gender & other baseline characteristics of the subjects are depicted in (Table II). Significant difference was found between the distributions of age, gender, DI-S, & OHI-S among the groups. Fig. 2 shows the distribution of different forms of renal disease among the case group.

Table II Frequency of baseline characteristics (Independent variables)

	Case n (%)	Control n (%)	*p-value (2-tailed)
Gender			
Male	44 (88)	28 (56)	0.000
Female	6 (12)	22 (44)	
Age (Years)			
Range	15-79	15-77	
Mean ± SD	49.82±16.38	36.22±13.39	0.000
15-24	4 (8)	12 (24)	0.000
25-34	5 (10)	14 (28)	
35-44	10 (20)	8 (16)	
45-54	6 (12)	11 (22)	
55-64	13 (26)	4 (8)	
65	12 (24)	1 (2)	
Modified Kuppuswamy Socio-demographic status (Education, income, profession)			
Lower middle class	32 (64)	22 (44)	0.112
Upper middle class	17 (34)	25 (50)	
Upper class	1 (2)	3 (6)	
Marital status			
Married	44 (88)	39 (78)	0.183
Unmarried	6 (12)	11 (22)	
BMI & Weight category			
BMI (Mean ± SD)	24.25 ± 4.54	25.35 ±5.64	0.335
Underweight	3(6)	4(14.81)	0.165
Ideal weight	27(54)	8(29.63)	
Overweight	10(20)	9(33.33)	
Obese	10(20)	6(22.22)	
Races			
Muslim	44(88)	45(90)	0.490
Hindu	6(12)	4(8)	
Others	0	1(2)	
Periodontal status			
DI-S status			
Good	1(2)	5(10)	0.0012
Fair	26 (52)	38(76)	
Poor	23(46)	7(14)	
CI-S status			
Good	1(2)	2(4)	0.109
Fair	45(90)	48(96)	
Poor	4(8)	0(0)	
OHI-S status			
Good	1(2)	2(4)	0.006
Fair	25(50)	39(78)	
Poor	24(48)	9(18)	
MGI status			
No gingivitis	4(8)	0(0)	0.103
Mild gingivitis	33(66)	29(58)	
Moderate gingivitis	9(18)	14(28)	
Severe gingivitis	4(8)	7(14)	

*'t' test for means ± SD & χ^2 ˉ test for frequency distributions.

Mean values for OHI-S, MGI, PPD and CAL are given in table III. OHI-S & CAL values were significantly elevated in the case group as compared to controls ($p < 0.05$).
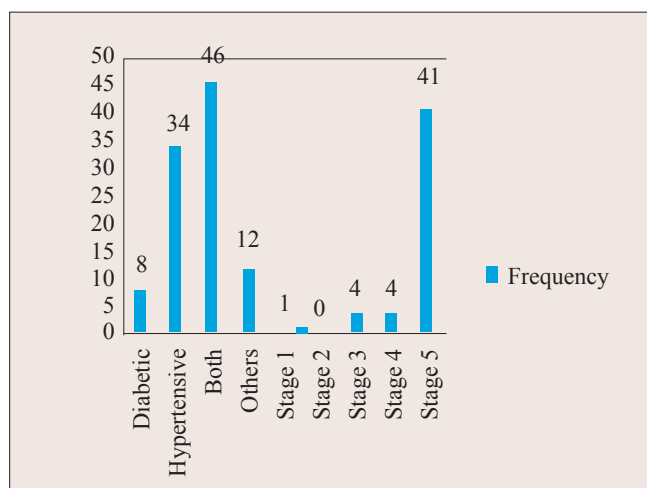
Figure 2 Distribution of renal disease & staging in case group

Table III Mean values for periodontal parameters in both groups

	Case group	Control group	#p-value
OHI-S	2.97±0.88	2.38±0.59	0.002
MGI	1.78±1.09	2.3±1.02	0.015
PPD	2.66±0.66	2.85±0.53	0.116
CAL	3.75±1.53	2.61±1.28	0.000

#Students" t-test (2-tailed value).

Table IV Distribution of periodontal disease severity in case & control group

Severity	Case (Frequency)	Control (Frequency)	*p-value
No Periodontitis	13 (26%)	19(38%)	
Mild Periodontitis	1 (2%)	7(14%)	
Moderate Periodontitis	30 (60%)	19(38%)	0.014
Severe Periodontitis	6 (12%)	5(10%)	
Total	50 (100)	50(100)	

*Chi-square test, p-value at No periodontitis (No & mild level) to Periodontitis (Moderate to severe level) level.

Table IV indicates the severity of periodontal disease in both case & control group. In the case group; 36 patients (72%) of the total 50 had moderate to severe periodontitis and the remaining patients (14, 28%) belonged to the category Mild/No Periodontitis. In the control group 26 of the 50 subjects (52%) belonged to the category of Mild/No Periodontitis, only 24 (48%) subjects had moderate to severe periodontitis. When the proportion of moderate to severe periodontal disease between the groups were compared using a chi-square test, it was observed that the prevalence and severity of periodontal disease was significantly higher in the case group as compared to the controls ($p < 0.05$).

DISCUSSION

Periodontal disease results from the interaction between specific bacteria existing in the dental plaque biofilm with components of host immune response in susceptible individuals. The inflammatory lesion in periodontitis extends from the gingiva to deeper connective tissues resulting in periodontal pockets and loss of alveolar bone. The periodontal pocket serves as a portal of entry for pathogenic bacteria and their products into the systemic circulation. The large surface area of the aggregate periodontal lesion thus serves as a significant source of inflammation in patients with moderate or severe periodontitis.[19]

A large body of epidemiological evidence provides proof that the systemic chronic inflammatory burden of periodontal disease contributes to endothelial injury and atherosclerosis, perhaps mediated by the acute phase reactants.[20] Previous studies have shown that chronic inflammation contributes to progressive atherosclerosis in patients with End-Stage Renal Disease (ESRD) undergoing hemodialysis.[21] Available data suggest that pro-inflammatory cytokines and the acute phase response play a central role in the genesis of both malnutrition and cardiovascular complications in these patients.[22] Emerging evidence also suggest that periodontal disease may provide a covert source of systemic inflammation in these patients and it may, in fact, predict the development of ESRD and the development of overt nephropathy in diabetic patients.[19,23] A recently conducted longitudinal study demonstrated that periodontal disease is a significant nontraditional risk factor for chronic kidney disease.[24]

Our study compared the periodontal health status of patients with different forms of renal disease to that of healthy controls. The results of the present study indicate that a greater prevalence and severity of periodontal disease exists in patients with renal disease. Although many previous authors have obtained similar results, conflicting reports are also available and they have failed to detect any difference in the periodontal health in patients underwent hemodialysis.[7-15] In the present study, the periodontal parameters (OHI-S and CAL) were elevated in the case group as compared to the control group and the results were statistically significant at ($p<0.05$). The periodontal destruction as indicated by elevated PPD and CAL levels, CAL is significantly worse in the case group (3.75 +1.53) as compared to the controls (2.61 + 1.28).

Low Periodontal parameters MGI & PPD in case group could be explained by the actions of antibiotic therapy most of the patients already were taking. This may exert a bit low periodontal severity in case group. Still the prevalence of moderate to severe periodontitis in the case group (72%) is very high as compared to that in controls (48%). While earlier authors have conducted similar studies in dialysis populations; our study population included only predialytic patients.[8,11,13]

The prevalence obtained in the present study is greater than that observed by previous studies in hemodialysis patients (58.9% and 25.9%) and in chronic ambulatory peritoneal dialysis patients (67.3%).[4,9,7] Therefore, our study result confirms our hypothesis that a greater prevalence and severity of periodontal disease exists in patients with renal disease as compared to systemically healthy controls. It might be possible that severe periodontal inflammation in these patients could have also contributed to the level of their renal disease burden.

The systemic disease burden could have also influenced the progression of periodontal disease in these patients. It has been already established that the chronic renal condition could have significant effects on the prevalence and severity of periodontal disease.[15,25] A recent study conducted in a Japanese population suggests that the increased incidence of chronic renal failure that occurs with age might increase the probability of severe periodontal disease in community-dwelling elderly subjects.[25] The authors also postulate that periodontal disease is influenced by chronic renal failure because of insufficient bone metabolism. Earlier studies provide evidence that vitamin D polymorphisms may predispose to both chronic kidney disease and periodontitis.[26] Hence, it is possible that periodontal disease and chronic kidney disease might share common risk factors.

LIMITATIONS

Our study, being cross-sectional in design, does not establish a cause and effect relationship. Therefore, further studies are necessary to elucidate the complex relationship between these chronic diseases.

Another limitation of this study is that the case group included subjects with diabetic kidney disease. This may be regarded as a confounder as diabetes mellitus is a risk factor for both, renal and periodontal disease.

CONCLUSIONS

This study provides evidence for a greater prevalence and severity of periodontal disease among predialytic patients with renal disease. As periodontal evaluation is not performed as part of routine medical assessment in these patients, the periodontal source of inflammation may be overlooked.

RECOMMENDATIONS

Further research with well controlled randomized clinical trials is necessary to establish whether early detection of periodontal disease followed by effective periodontal therapy will actually result in decreased in atherosclerotic complications in patients with renal disease.

CONTRIBUTIONS OF AUTHORS

PD-Conception, design, critical revision of contents & final approval.

MKU- Design, acquisition of data, drafting, data analysis, data interpretation & final approval.

DISCLOSURE

Both the authors declared no competing interest.

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Hospital Based Study on Correlation between Fibroscan Score and Liver Enzymes Level in Non Alcoholic Fatty Liver Disease

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ABSTRACT

Background : Non Alcoholic Fatty Liver Disease (NAFLD) is epidemic around the world. Bangladesh is also experiencing an increasing trend of NAFLD. Currently, diagnosis of NAFLD is most commonly made through incidental findings, such as ultrasonography for investigation of persistently abnormal liver function tests, when other suspected causes have been ruled out. FibroScan is a promising new modality for the noninvasive assessment of liver fibrosis. Current studies on FibroScan should be interpreted with some caution due to the limitations of percutaneous liver biopsy, which has been historically used as the gold standard. The objective of our study was to assess and correlate fibroscan scan score in NAFLD patients with liver enzymes.

Materials and methods: This prospective observational study included 150 patients who met inclusion criteria attending in the Gastroenterology Department and OPD of Chittagong Medical College Hospital in June 2019 to December 2019. Purposive sampling technique was used in this study. Informed written consent was obtained from the patients or attendant after full explanation of the purpose of the study. SGPT, SGOT, Ultrasonography of hepatobiliary system and Fibrosan were done. All necessary data was included in the data collection sheet and was analyzed by MS excel and SPSS-20.

Results: Out of 150 patients, 106 (70.7%) were male and 44 (29.30%) were female. 28 (18.70%) and 35(23.30%) patients had obesity and overweight respectively whereas 87 (58%) patients had normal body weight. Mean SGPT (U/L) (Mean±SD) of 150 patients was 58.99±39.22. 89(59.3%) and 61(40.7%) had raised SGPT and normal SGPT respectively. Mean SGOT (U/L) ((Mean±SD) of 150 patients was 37.15±24.26. 54(36%) and 96(64%) had raised SGOT and normal SGOT respectively. SGPT for discriminating fibrosis grade F0-F1 from Grade F2-F4 was 0.590 (95% CI:0.467-0.714, p=0.204). SGOT for discriminating fibrosis grade F0-F1 from Grade F2-F4 was 0.614 (95% CI: 0.464-0.765, p=0.108). There is no significant role of the liver enzyme values for prediction of severe grade of fibrosis. SGPT for discriminating steatosis grade S0-S1 from Grade S2-S3 was 0.614 (95% CI:0.515-0.713, p=0.027). SGOT for discriminating steatosis grade S0-S1 from Grade S2-S3 was 0.656 (95% CI: 0.562-0.750, p=0.002). There is significant role of the liver enzyme values for prediction of severe grade of steatosis.

Conclusion: FibroScan is a non-invasive and effective screening method for hepatic steatosis and liver fibrosis in NAFLD patients, particularly those having ultrasonographic evidence of fatty changes in liver irrespective of serum SGPT and SGOT level.

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GRAPHICAL ABSTRACT   Hospital Based Study on Correlation between Fibroscan Score and Liver Enzymes Level in Non Alcoholic Fatty Liver Disease

Materials and methods	Results	Results		
Observational Study	Comorbidity	SGPT	SGOT	Trigly-ceride
Population (150)				
Male 106 Female 44	DM (40)	⬆ 89 (59.3)	⬆ 54 (36%)	⬆ 84 (56%)
Age (19-75 Years)	HTN (24)	Normal 61 (40.7%)	Normal 96 (64%)	Normal 66 (44%)
Means fibrosis E/kPa 5.75 ± 3.35	Overweight (35)	● S_3 Steatosis present in 57 patients (38%)	● AUC for steatosis to discriminate severity	
Mean Steatosis CAPD dB 284.34±42.94	Obesity (28)	● F3 F4 Fibrosis present in 7 patients	For SGPT 0.614 For SGOT 0.656 AUC discriminating Fibrosis For SGPT 0.590 For SGOT 0.614	

Conclusion : There is significant role of liver enzyme values for prediction of severe liver steatosis rather than fibrosis.

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Key words: Fibroscan; NAFLD; SG   ; Ultrasonography.

INTRODUCTION

Non Alcoholic Fatty Liver Disease (NAFLD) is rapidly becoming the most common cause of chronic liver disease in Western Countries, and a similar trend is expected in Eastern Countries in the next years. Non-Alcoholic Fatty Liver Disease (NAFLD) includes a spectrum of disorders ranging from the simple fatty liver to non-alcoholic steatohepatitis, with increasing fibrosis leading to cirrhosis.[1] The prevalence of NAFLD is alarmingly growing worldwide in adult and children/adolescent populations, with a bidirectional association between NAFLD and metabolic syndrome[2]. Obesity, insulin resistance, type 2 diabetes mellitus, and dyslipidemia are the most relevant metabolic conditions related to this spectrum of diseases.[1,2]

Worldwide guidelines agree that, whenever NAFLD is suspected, the initial diagnostic workup should include a noninvasive imaging examination to confirm the presence of steatosis and general liver biochemistry.[3-8] Non-invasive assessment should aim first of all to identify NAFLD among patients with metabolic risk factors and then to monitor disease progression and treatment response, identifying patients with the worst prognosis.[3]

Although NAFLD may present by standard laboratory liver tests, frequently a slight increase of Aspartate Aminotransferase (AST) or Alanine Aminotransferase (ALT) or Gamma-Glutamyl Transpeptidase (Gamma-GT) is observed. However, all the guidelines agree that normal levels of liver enzymes may not exclude NAFLD, being a not sensitive screening test.[3-8] There is a consensus for using abdominal Ultrasound (US) as the first-line examination to identify liver steatosis in patients with increased liver blood exams or suspected NAFLD, in daily clinical practice . The main advantages of US derive from its broad availability and low cost.

Another imaging technique used to quantify liver fat content is the ultrasonography-based Transient Elastography (TE) that is fibroscan using Continuous Attenuation Parameter (CAP). This promising tool has shown a good sensitivity, measuring simultaneously liver stiffness, potentially evaluating NAFLD severity at the same setting.[9] Asia-Pacific guidelines propose CAP as a useful screening tool for NAFLD diagnosis, as well as for demonstrating improvement in hepatic steatosis after lifestyle intervention and body weight reduction.[5] Transient elastography has been recently approved by US Food and Drug Administration to investigate adult and pediatric patients with liver disease.

Its cut-off value for advanced fibrosis for adults with NAFLD has been established to 9.9 KpA with 95% sensitivity and 77% specificity.[10] In particular, elastography score has been shown to have good diagnostic accuracy for the presence ofclinically significant fibrosis for advanced fibrosis (≥F3) and cirrhosis, and with a negative predictive value of 90% in ruling out cirrhosis when using a cut-off of 7.9 kPa. Magnetic Resonance Imaging (MRI) either by proton density fat fraction (^{1}H-MRS) or spectroscopy, remains the gold standard to assess and quantify hepatic steatosis, detecting the amount of liver fat as low as 5%-10%, its use in the clinical practice is still limited. In fact, despite its robust accuracy, its limited availability, high costs and a long time of execution, make the procedure not recommended in the daily clinical setting.[11]

American guidelines underline the vital role of Magnetic Resonance Elastography (MRE) in identifying different degrees of fibrosis in patients with NAFLD, performing better than transient elastography for recognizing intermediate stage of fibrosis, but showing a same predictive value for advanced fibrosis stages.[12] Therefore, AASLD guidelines conclude that MRE and transient elastography are both useful tools for identifying NAFLD patients with advanced liver fibrosis.

To date, liver biopsy is the gold standard for diagnosing NASH and staging liver fibrosis, despite several limitations such as sampling error, variability in interpretation by pathologists, high cost and patient discomfort.[13]

MATERIALS AND METHODS

It was prospective observational study done on 150 patients attending in the Gastroenterology Department and OPD of Chittagong Medical College Hospital (CMCH). Total 150 patients were taken as study subjects who met inclusion criteria during the period of June 2019 to December 2019 after getting ethical approval from Ethical Committee of Chittagong Medical University. Purposive sampling technique was used in this study. Inclusion criteria were patient age within 18 to 65 years and Ultrasound of hepatobiliary system showed fatty liver. Exclusion criteria were Ultrasound of hepatobiliary system suggestive of chronic liver disease, morbid obesity BMI ≥40, liver disease due to other causes, patient with severe co-morbid condition and not giving informed consent. Informed written consent was obtained from the patients or attendant after full explanation of the purpose of the study. SGPT, SGOT, Ultrasonography of hepatobiliary system and Fibrosan were   done. Ultrasonography grading of NAFLD includes Grade I: diffusely increased hepatic

echogenicity but periportal and diaphragmatic echogenicity is still appreciable, Grade II: diffusely increased hepatic echogenicity obscuring periportal echogenicity but diaphragmatic echogenicity is still appreciable, Grade III: diffusely increased hepatic echogenicity obscuring periportal as well as diaphragmatic echogenicity. All necessary data was included in the data collection sheet and was analyzed by Microsoft Excel and SPSS-20.

RESULTS

150 patients were included in this study. Mean age of this study was 41.50±11.65 (Mean±SD) and age was in between 19 years to 75 years. Out of 150 patients, 106 (70.7%) were male and 44 (29.30%) were male. 40 (26.7%) and 24 (16%) patients had diabetes and hypertension respectively. 28 (18.70%) and 35(23.30%) patients had obesity and overweight respectively whereas 87 (58%) patients had normal body weight (Table-I).

Table I Demographic, clinical and laboratory parameters of the patients (n=150)

Variables		Frequency (%)*
Age (Years)	Mean ±SD	41.50±11.65
		19-75
Sex	Male	106 (70.70)
	Female	44 (29.30)
Diabetes mellitus		40 (26.7)
Hypertension		24 (16.0)
Body Mass Index, kg/m^2	Mean ±SD	22.35±3.01
	Normal	87 (58.00)
	Overweight	35 (23.30)
	Obese	28 (18.70)
Total cholesterol, mg/dl	Mean ±SD	192.68±44.67
	Normal	91 (60.70)
	High	59 (39.30)
HDL, mg/dl	Mean ±SD	37.79±10.63
	Normal	39 (26.00)
	High	111 (74.00)
LDL, mg/dl	Mean ±SD	116.92±36.60
	Normal	128 (85.30)
	High	22 (14.70)
TG, mg/dl	Mean ±SD	229.06±148.02
	Normal	66 (44.00)
	High	84 (56.00)
Platelet count	Mean ±SD	295513±70189
TSH	Mean ±SD	2.29±1.53
HbA1c, (%)	Mean ±SD	6.04±1.01
SGOT/SGPT		0.708±0.359

*Data were expressed as frequency (Percentage) if not otherwise mentioned.

Mean total cholesterol (mg/dl) ((Mean±SD) of 150 patients was 192.68±44.67. 59(39.30%) and 91(60.7%) had raised and normal total cholesterol respectively. Mean HDL (mg/dl) (Mean±SD) was 37.79±10.63. 111(74%) and 39(26%) had raised and normal HDL respectively. Mean LDL (mg/dl) ((Mean±SD) of 150 patients was 116.92±36.60. 22(14.70%) and 128(85.30%) had raised and normal LDL respectively.Mean triglycerides (mg/dl) (Mean±SD) of 150 patients was 229.06±148.02. 84(56%) and 66(44%) had raised and normal triglycerides (TG) respectively.SGOT and SGPT ratio was 0.70±.35 (Table-I).

Out of 150 patients, simple fatty liver was found in 25 (16.7%) patients at Ultrasonography. 103(68.7%), 20(13.3%) and 2(1.3%) patients had Grade-I, Grade-II and Grade-III fatty change in Ultrasonography respectively (Table-II).

Table II NFALD severity of the of the patients (n=150)

Severity Parameters		Frequency (%)
Through Ultrasonography		
FL		25 (16.70)
Grade I		103 (68.70)
Grade II		20 (13.30)
Grade III		2 (1.30)
Through fibroscan		
Fibroscan (Fibrosis)	Mean ±SD	5.75±3.35
	F0-F1	131 (87.30)
	F2	12 (8.00)
	F3	1 (0.70)
	F4	6 (4.00)
Fibroscan (Steatosis)	Mean ±SD	284.34±42.94
	So	24 (16.00)
	S1	21 (14.00)
	S2	48 (32.00)
	S3	57 (38.00)

*Data were expressed as frequency (Percentage) if not otherwise mentioned.

Fibroscan was done in 150 patients. Mean (Mean±SD) fibrosis (E/kPa) was 5.75±3.35.131(87.30%), 12 (8%), 1 (0.7%) and 6(4%) patients had F0-F1, F2, F3 and F4 fibrosis changes. Mean (Mean±SD) steatosis (CAP dB/m) was 284.34± 42.94.24(16%), 21(14%), 48(32%) and 57(38%) patients had S0, S1, S2 and S3 steatosis changes (Table II).

Out of 150 patients, 61 patients had normal range SGPT. Mean (Mean±SD) age was 44.62±11.44. Male female ratio was 32:29.Mean BMI (kg/m^2) was 22.29±3.10.51(83.6%) patient had hypertension whereas 49 (80.30%) patients had Diabetes mellitus. Out of 61 patients, FO-F1 fibrosis score was seen in 56(91.80%) patients and F2-F4 fibrosis score was found in 5 (8.20%) patients at fibroscan. Mean fibrosis score was 5.17±2.36 (Mean±SD). Out of 61 patients, S0-S2 steatosis score was seen in 25 (41%) patients and S3-S4 steatosis score was found in 36(59%) patients at fibroscan. Mean steatosis score was 273.57±40.94 (Mean±SD). Simple fatty liver was found in 12(19.7%) patients at Utrasonography. Grade I-IV fatty changes were found in 49(80.30%). Out of 150 patients, 89 patients had raised SGPT. Mean age was 39.36±11.37 (Mean±SD). Male female ratio was 74:15.Mean BMI (kg/m^2) was 22.39±2.94. 75 (84.30%) patient had hypertension whereas 61 (68%) patients had Diabetes mellitus. Out of 89 patients, FO-F1 fibrosis score was seen in 75(84.30%) patients and F2-F4 fibrosis score was found in 14 (15.70%) patients at fibroscan respectively. Mean fibrosis score was 6.15±3.85 (Mean±SD). Out of 89 patients, S0-S2 steatosis score was seen in 20 (22.5%) patients and S3-S4 steatosis score was found in 69(77.50%) patients at fibroscan respectively. Mean steatosis score was 291.72±42.95 (Mean±SD). Simple fatty liver with raised SGPT was found in 13(14.60%) patients at Utrasonography. Grade I-IV fatty changes were found in 76(85.40%). Mean of fibrosis of normal and raised SGPT level was not clinically significant (P value 0.078) whereas mean of steatosis normal and raised SGPT level was clinically significant (p value 0.001) (Table III).

Table III Comparison of NAFLD patients with and without raised SGPT

Variables		Patients with normal SGPT (n=61)	Patients with raised SGPT (n=89)	p value
Age (Years)	Mean±SD	44.62±11.44	39.36±11.37	0.006[†]
Sex	Male:Female	32:29	74:15	<0.001[‡]
BMI (kg/m^2)	Mean±SD	22.29±3.10	22.39±2.94	0.857[†]
HTN		51 (83.60)	75 (84.30)	0.991[‡]
DM		49 (80.30)	61 (68.50)	0.255[‡]
Fibroscan (Fibrosis)				
	F0-F1	56 (91.80)	75 (84.30)	0.173[‡]
	F2-F4	5 (8.20)	14 (15.70)	
	Mean±SD	5.17±2.36	6.15±3.85	0.078[†]

| Fibroscan (Steatosis)			
S0-S2	25 (41.00)	20 (22.50)	0.015‡
S3-S4	36 (59.00)	69 (77.50)	
Mean±SD	273.57±40.94	291.72±42.95	0.001†
USG grading			
FL	12 (19.70)	13 (14.60)	0.615‡
Grade I-IV	49 (80.30)	76 (85.40)	

*Data were expressed as frequency (Percentage) if not otherwise mentioned. †p value obtained from Independent sample t test, ‡p value obtained from Chi-square test.

Out of 150 patients, 96 patients had normal range SGOT. Mean age was 43.45±11.99 (Mean±SD). Male female ratio was 65:31.Mean BMI (kg/m^2) was 22.25±2. 79(82.3%) patient had hypertension whereas 66 (68.70%) patients had Diabetes mellitus. Out of 96 patients , FO-F1 fibrosis score was seen in 87 (90.6%) patients and F2-F4 fibrosis score was found in 9 (9.4%) patients at fibroscan respectively. Mean fibrosis score was 5.56±3.68 (Mean±SD). Out of 96 patients, S0-S2 steatosis score was seen in 37 (38.50%) patients and S3-S4 steatosis score was found in 59 (61.50%) patients at fibroscan respectively. Mean steatosis score was 277.17±41.71 (Mean±SD). Simple fatty liver was found in 16(16.7%) patients whereas Grade I-IV fatty changes were found in 80(83.30%) at Ultrasonography.Out of 150 patients, 54 patients had raised SGOT. Mean age was 37.87±10.14 (Mean±SD). Male female ratio was 41:13.Mean BMI (kg/m^2) was 22.52±3.29. 47 (87%) patient had hypertension whereas 44(81.5%) patients had Diabetes mellitus. Out of 54 patients, FO-F1 fibrosis score was seen in 44(81.50%) patients and F2-F4 fibrosis score was found in 10 (18.5%) patients at fibroscan respectively. Mean fibrosis score was 6.1±2.65 (Mean±SD). Out of 54 patients, S0-S2 steatosis score was seen in 8 (14.80%) patients and S3-S4 steatosis score was found in 46(85.2%) patients at fibroscan respectively. Mean steatosis score was 197.11±42.51 (Mean±SD). Simple fatty liver with raised SGOT was found in 9(16.7%) patients at Ultrasonography wheras Grade I-IV fatty changes were found in 45 (83.30%). Mean of fibrosis of normal and raised SG0T level was not clinically significant (p value 0.448) whereas mean of steatosis normal and raised SGPT level was also not clinically significant (p value 0.005) (Table IV).

**Table IV** Comparison of NAFLD patients with and without raised SGOT

Variables		Patients with normal SGOT (n=96)	Patients with raised SGOT (n=54)	p value
Age (Years)	Mean±SD	43.45±11.99	37.87±10.14	0.004†
Sex	Male:Female	65:31	41:13	0.329‡
BMI (kg/m^2)	Mean±SD	22.25±2.83	22.52±3.29	0.607†
HTN		79 (82.30)	47 (87.00)	0.447‡
DM		66 (68.70)	44 (81.50)	0.148‡
Fibroscan (Fibrosis)	F0-F1	87 (90.60)	44 (81.50)	0.106‡
	F2-F4	9 (9.40)	10 (18.50)	
	Mean±SD	5.56±3.68	6.10±2.65	0.448†
Fibroscan (Steatosis)	S0-S2	37 (38.50)	8 (14.80)	0.002‡
	S3-S4	59 (61.50)	46 (85.20)	
	Mean±SD	277.17±41.71	197.11±42.51	0.005†
USG grading	FL	16 (16.70)	9 (16.70)	1.00‡
	Grade I-IV	80 (83.30)	45 (83.30)	

*Data were expressed as frequency (Percentage) if not otherwise mentioned. †p value obtained from Independent sample t test, ‡p value obtained from Chi-square test.
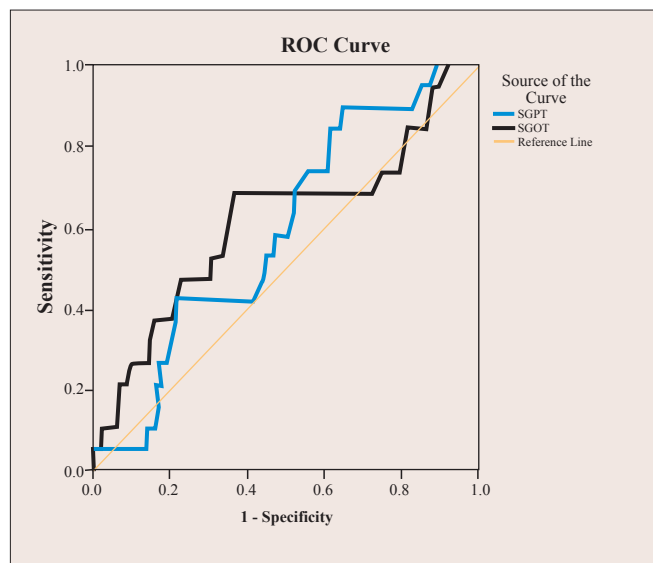
Figure 1 ROC curve for SGPT and SGOT to discriminate fibrosis grade F0-F1 from Grade F2-F4

AUC of SGPT for discriminating fibrosis Grade F0-F1 from Grade F2-F4 was 0.590 (95% CI:0.467-0.714, p=0.204). AUC of SGOT for discriminating fibrosis Grade F0-F1 from Grade F2-F4 was 0.614 (95% CI: 0.464-0.765, p=0.108). There is no significant role of the liver enzyme values for prediction of severe grade of fibrosis.
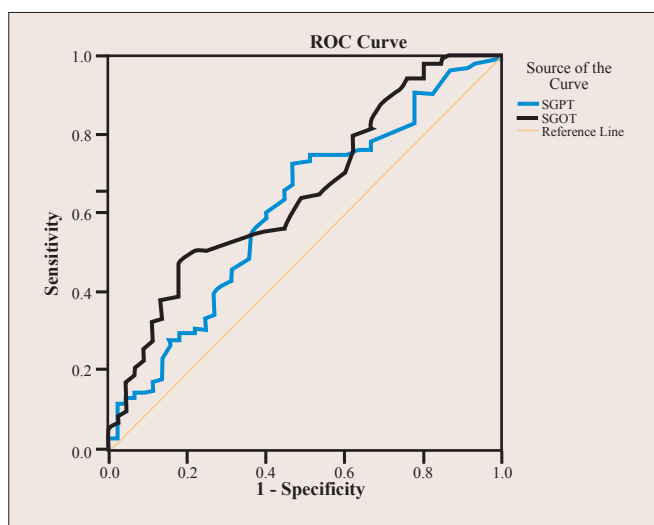
Figure 2 ROC curve for SGPT and SGOT to discriminate steatosis grade S0-S1 from Grade S2-S3

AUC of SGPT for discriminating steatosis Grade S0-S1 from Grade S2-S3 was 0.614 (95% CI:0.515-0.713, p=0.027). AUC of SGOT for discriminating steatosis Grade S0-S1 from Grade S2-S3 was 0.656 (95% CI: 0.562-0.750, p=0.002). There is significant role of the liver enzyme values for prediction of severe grade of steatosis.

DISCUSSION

Up to 90% of patients with NAFLD have simple steatosis, which carries a relatively benign prognosis, with no overall increase in mortality. However, approximately 10–30% have the potentially progressive form of NAFLD, Non-Alcoholic Steatohepatitis (NASH) which is associated with hepatocellular injury and inflammation. Approximately 25–40% of patients with NASH will develop progressive liver fibrosis, ultimately resulting in cirrhosis in 20–30%. The development of cirrhosis due to NASH is associated with a poor long-term prognosis. The 10-year mortality rate is 20% for subjects with Child-Pugh A disease and 45% will decompensate within 10 years of diagnosis. In addition, subjects with NASH cirrhosis are at significant risk of developing hepatocellular carcinoma (2.6% per year).[14]

In our study, Fibroscan was performed in 150 patients with range of age (19 to 75). Mean age was 41.50 ±11.65. NAFLD is perceived to be disease that mainly affects middle and older age group.[15] But, in our study, we found that NAFLD also found in very young age that is 19 years of age. This may be due to changing

dietary patterns, sedentary life styles and genetic predisposition.

Our study shown that male patients were more likely to suffer from NAFLD than female patients. This phenomenon may be explained by the protective effect of female sex hormones on the progression of hepatic fibrosis. The center at KAUH previously published research findings as well as national and international data on NAFLD that have shown that males are more commonly affected than females which was similar to our study.[15]

Findings from previous studies confirmed that NAFLD has a profound association with diabetes mellitus and higher BMI (Overweight and obesity).[16,17] NAFLD is known as the hepatic component of metabolic syndrome, and stronger evidence demonstrates its association with diabetes mellitus.[9] In our study, 26.7% of NAFLD cases were observed in subjects with diabetes. This finding confirmed the strong association of diabetes with fatty changes in liver, showing accordance with the previous studies.[16-19]

Patients with NAFLD are typically found to be overweight or obese.[20,21] Our data suggested that 23.3% and 18.70% subjects with NFALD were overweight and obese respectively, confirming that BMI is an independent predictor of NAFLD. Mean BMI of the participants recruited in our study was 22.35±3.01. There is emerging but limited evidence that NAFLD may affect lean or normal individuals, especially Asians. In Asian countries, such as South Korea, Japan, and India, the prevalence of NAFLD among lean individuals ranges from 12% to 20%.[22] But, Our findings showed that 58% of our patients (87) with NAFLD had normal body weight which may be due to changing dietary patterns, sedentary life styles and genetic predisposition.

16% of our patient had also hypertension may be as part of metabolic syndrome.

Hypertriglycemia is most prevalent among patients with NAFLD and is independent risk factors of NAFLD. 84 patients (56%) of our study had hypertriglycerideamia.

An elevated ALT level is the primary laboratory abnormality in patients with NAFLD, but not all patients with NAFLD have elevated levels of ALT and the diagnostic sensitivity of serum SGPT for NASH is only about 40%.[23-26] 89 patients (59.3%) of our study subject had raised SGPT. Together our current results and

previous findings indicate that ALT is an important bio- marker that is suggestive of but not diagnostic of hepatic steatosis and fibrosis. Therefore, although FibroScan screening to evaluate liver stiffness and steatosis is a priority with elevated SGPT levels, this imaging method should be considered even for with normal SGPT concentrations with ultrasonography revealed fatty liver.

Regarding SGOT, it is considered that values twice as high as normal are an indicator of severity of liver fibrosis.[27] 54(36%) patients of our had raised SGOT. However, there is also a percentage of approximately 10% of patients with NASH with normal levels of SGOT and SGPT.[28]

61(40.7%) and 96(64%) of our study subject had normal SGPT and SGOT level respectively. This funding does not similar to previous study which might be due to heterogenecity of Asian population.

We also found that the mean value of fibrosis as per fibroscan in 61 patients with normal SGPT and in 89 patients with raised SGPT were 5.17±2.36 kPa and 6.15±3.85 kPa respectively.In this study, We also found that the mean value of fibrosis as per fibroscan in 96 patients with normal SGOT and in 54 patients with raised SGOT were 5.56±3.68 kPa and 6.10±2.65 kPa respectively. We also found that AUC of SGPT for discriminating fibrosis Grade F0-F1 from Grade F2-F4 was 0.590 (95% CI:0.467-0.714, p=0.204). AUC of SGOT for discriminating fibrosis Grade F0-F1 from Grade F2-F4 was 0.614 (95% CI: 0.464-0.765, p=0.108). Therefore, there was no significant role of the liver enzyme values for prediction of severe grade of fibrosis.

Andrea Marie Macabuag-Oliva et found that, the primary laboratory abnormalities in NAFLD are elevated serum AST and ALT levels, they are seldom higher than 3 or 4 times the upper limit of   normal. Changes of aminotransferases do not parallel changes in fibrosis stage, showing accordance to our study.[29]

We also found that the mean value of steatosis as per fibroscan in 61 patients with normal SGPT and in 89 patients with raised SGPT were 273.57± 40.94 CAP and 291.72±42.95 CAP respectively. In this study, We also found that the mean value of steatosis as per fibroscan in 96 patients with normal SGOT and in 54 patients with raised SGOT were 277±41.71CAP and 197.11±42.51 CAP respectively. This finding might be due to development of NASH which may lead to cirrhosis and normalization of SGPT with increase SGOT level. Our study also concluded that AUC of SGPT for discriminating steatosis Grade S0-S1 from Grade S2-S3 was 0.614 (95% CI:0.515-0.713, p=0.027). AUC of SGOT for discriminating steatosis Grade S0-S1 from Grade S2-S3 was 0.656 (95% CI: 0.562-0.750, p=0.002). There is significant role of the liver enzyme values for prediction of severe grade of steatosis rather than fibrosis.

LIMITATIONS
We have identified NAFLD with Ultrasonoghraphic (USG) findings which was further evaluated by Fibroscan without liver biopsy. Liver biopsy is the gold standard for diagnosing NAFLD.USG may miss NAFLD detection if liver fat less than 30%. Other limitations of this study are small sample size and single centre confined to Gastroenterology Department.

CONCLUSIONS
In conclusion, the present study revealed that FibroScan was feasible and most effective non invasive evaluation of NAFLD patients particularly in terms of fibrosis. Therefore FibroScan is a non-invasive and effective screening method for hepatic steatosis and liver fibrosis in NAFLD patients, particularly those having ultrasonographic evidence of fatty changes in liver irrespective of serum SGPT and SGOT level.

RECOMMENDATIONS
Now, NAFLD is epidemic around the world. Bangladesh is also experiencing an increasing trend of NAFLD due to changing dietary patterns and sedentary lifestyles. As SGPT and SGOT are poor predictor of Non-Alcoholic Fatty Liver Disease (NAFLD). Ultrasound is the first-line imaging test for patients with suspected NAFLD with risk factors. As ultrasonography dose not predict fibrosis in NAFLD patients, non invasive test Fibroscan provides valuable approach for assessing heaptic fibrosis. This can avoid liver biopsy without clear indication.

CONTRIBUTION OF AUTHORS

MNM - Conception, design, acquisition data, interpretation of data and final approval.

SMAH – Conception, design, drafting and final approval.

FA- Critical revision, interpretation of data and final approval.

EUA -Data analysis, critical revision and final approval.

BP-Interpretation of data, critical revision and final approval.

DISCLOSURE

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Comparison between Dead Space Closure with Quilting Suture Versus Conventional Closure with Drainage for the Prevention of Seroma after Mastectomy for Breast Cancer: A Randomized Controlled Trial

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ABSTRACT

Background: Seroma is one of the common postoperative complication of mastectomy. This complication is associated with significant impact on patient's outcome and healthcare cost. The optimal closure approach for seroma prevention remains unknown but some evidence suggests that quilting suture of the dead space could lower the incidence of seroma. The aim of this trial was to compare seroma formation using quilting suture versus conventional closure with drainage in patients underwent mastectomy.

Methods and materials: Between July 2019 and October 2020, 64 patients with an indication for mastectomy were enrolled in this randomized controlled trial. Patients were randomly allocated to one of the two following arms: conventional wound closure (Control group, n = 32) and flap fixation using quilting sutures (Intervention group, n = 32). The primary outcome was the need for seroma aspiration within 21 days following mastectomy. The secondary outcomes were surgical-site infection, shoulder function and mobility, cosmesis and length of hospital stay.

Results: Therewere no significant difference between the two groups as regards the demographic and clinical characteristics. A total of 25 (78.1%) patients in the conventional group and 12 patients (37.5%) in the quilting group developed seroma, crude relative risk was 2.08, 95% confidence interval (1.28-3.38, p=0.001). The mean frequency of seroma aspiration and length of hospital stay was significantly lower in the quilting group. Shoulder movement and cosmesis were also better at 21 days following mastectomy in intervention group compared to control group.

Conclusions: Dead space closure with quilting sutures lead to a significant reduction in aspirations of post-mastectomy seroma. The authors strongly advise surgeons to use sutures for dead space closure instead of conventional technique in patients undergoing mastectomy.

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Comparison between Dead Space Closure Versus Conventional Closure for Prevention of Seroma after Mastectomy   *Ahmed S et al*

GRAPHICAL ABSTRACT   *Comparison between Dead Space Closure with Quilting Suture Versus Conventional Closure with Drainage for the Prevention of Seroma after Mastectomy for Breast Cancer : A Randomized Controlled Trial*

Materials and methods	Results			
		Intervention group	**Control group**	**p value**
Randomized controlled trial	Seroma developed	12	25	0.001
Patients 64	LOH (Days)	4.24± 1.87	5.43 ± 1.25	> 0.001
Intervention group 32	Surgical site infection	3 (9.4%)	5 (15.6%)	0.445
	Skin flap macrosis	0 (0)	1 (3.1%)	0.742
Control group 32	Slightly restricted movement of arm	6 (18.8%)	20 (62.5%)	>0.001
	Unsatisfactory cosmesis at 21st POD	3 (9.4%)	10 (31.3%)	.03

Conclusion : Quilting sutures will reduce seroma formation significantly.

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Key words: Breast cancer; Mastectomy; Quilting suture.

INTRODUCTION

Breast cancer is one of the most common malignancies in women worldwide and is the leading cancer-related cause of death in women. In GLOBOCAN 2018, it was estimated that 2,088,849 (11.6%) new cases of breast cancer were identified and 626,679 (6.6%) cases of death due to breast cancer in the world.[1] Breast cancer remains a leading dreadful cancer of women in Bangladesh.[2-4] Surgical treatment is the preferred option for breast cancer.[5]

Postoperative seroma is a common complication after mastectomy.[6-13] Seroma is a collection of serous fluid in the dead space of post-mastectomy skin flap, axilla or breast following modified radical mastectomy or breast conserving surgery and is the commonest early sequel.[14] This presumed complication, albeit usually of minor consequence, may also impact healthcare costs requiring prolongation of hospital stay or unplanned outpatient visits and may delay adjuvant therapy.[13] The reported incidence of seroma formation varies widely between 15 and 90%.[15]

Conventional wound closure commonly uses suction drain after mastectomy to prevent seroma despite seroma frequently occurs after drain removal.[16] Poor results were reported from the studies on seroma prevention focused on the obliteration of the dead space through fibrinogen, thrombin sealants, glues or tetracyclin.[12] Some recent evidence suggests that quilting suture reduces the incidence of seroma.[17-19] Quilting suture consists in suturing the skin flaps to the underlying musculature to reduce 'dead space'.[20] It aims to restore the integrity of tissue planes.

However, the studies reported to date are limited by small sample size, absence of randomization, concomitant use of drainage with quilting suture and most studies were single center initiatives that lacked sufficient power to inform surgical practice.[21-29] Thus, this study was conducted to assess, in a randomized controlled trial, quilting suture of the dead space at the pectoral area as compared to conventional closure with drainage on seroma prevention within 21 days following mastectomy for breast cancer.

MATERIALS AND METHODS

This open label randomized controlled trial was conducted between July 2019 and October 2020 among 64 patients who were selected for modified radical mastectomy in Chittagong Medical College Hospital and two other selected private hospitals. Before commence the study ethical permission was taken from the proper authorities. The enrolled patients were randomly divided into 2 groups, the study group and the control group of 32 each, by block randomization. In the study group, after mastectomy, the flaps were approximated with quilting sutures (Using Vicryl 2-0) to the underlying chest wall. Multiple running sutures were placed at periodic intervals (< 2cm) between subcutaneous layer of the flaps and the underlying pectoral muscle. In the control group, the flaps were approximated by conventional method at the edges and two closed suction drain was placed, one in the chest wall and another in the axilla. Whereas in quilting group, a single axillary drain was kept. Patients and their tumor characteristics and operation related factors were documented. The drains were removed when collection became less than 50cc in 24 hours. Local examination was done over the flaps and axilla to exclude the presence of collections/seroma. The total volume of the drained fluid and seroma formation were documented.

Patients were followed up till 21 days after surgery. The primary outcome was the need for seroma aspiration within this period. The secondary outcomes were surgical-site infection, shoulder mobility, cosmesis and length of hospital stay. Quantitative variables were expressed as either mean ± Standard Deviation (SD) or median (Interquartile range) and qualitative variables were presented as percentages or proportions. Student's t-test or Mann Whitney U test was used to analyze quantitative variables while qualitative variables were compared by means of Chi-square test between two groups. $p < 0.05$ was considered statistically significant. Statistical analysis was performed using SPSS version 23.0.

RESULTS

Tumor characteristics of patients of both the groups were compared and summarized in the Table I. The mean age of the quilting group was 43.94±10.82 years, while in the control group it was 43.96±9.99, with a non-significant difference (p=0.914). Similarly, there were no significant differences detected between the two groups with respect to comorbidity pattern, smoking behavior, tumor size, lymph node involvement and the neoadjuvant chemotherapy received.

Table I Demographic and clinical characteristics of the patients stratified by study groups

Variables	Quilting suture (n=32)	Conventional (n=32)	p value
Age in years	43.94±10.82	43.96±9.99	0.914[†]
Comorbidity			
DM	3 (9.4)	4 (12.5)	0.071[**]
HTN	4 (12.5)	5 (15.6)	0.071[**]
IHD	2 (6.2)	1 (3.1)	0.071[**]
Asthma	0 (0)	1 (3.1)	0.071[**]
Smoking	1 (3.1)	1 (3.1)	0.071[*]
Tumour size (cm)	4.19 ± 0.87	4.24 ± 1.01	0.615[†]
Number of LN involved,	5 (0-7)	5 (0-8)	0.071[‡]
Extent of the LN involvement			
Level I	4 (12.5)	6 (18.8)	
Level II	28 (87.5)	25 (78.1)	0.148[*]
Level III	0 (0)	1 (3.1)	
Neoadjuvant chemotherapy	2 (6.3)	5 (15.6)	0.231[*]

Data were expressed as frequency (Percentage) mean ± SD or Median (IQR) [†]p value obtained from Student's t test [*]p value was obtained from Chi-square test [**]p values were obtained from Fishers Exact test. [‡]p value was obtained from Mann-Whitney U test. DM: Diabetes Mellitus, HTN: Hypertension, IHD: Ischemic Heart Disease, LN: Lymph Node.

Operation related findings were compared between the two groups (Table II). There were no significant differences detected between the two groups with respect to dissection types, axillary dissection and per-operative blood loss.

Table II Operative characteristics of the patients stratified by study groups

Variables	Quilting suture (n=32)	Conventional (n=32)	p value
Dissection type			
Extensive	1 (3.1)	3 (9.4)	0.302[*]
Not extensive	31 (96.9)	29 (90.6)	
Axillary dissection			
Done	32 (100)	32 (100)	NA
Not done	0 (0)	0 (0)	
Per-operative blood loss			
<100 ml	28 (87.5)	24 (75.0)	
100-500 ml	4 (12.5)	6 (18.7)	0.094[*]
>500 ml	0 (0)	2 (6.3)	

Data were expressed as frequency (Percentage). [*]p value was obtained from Chi-square test. NA: Not Applicable.

The incidence of seroma in the intervention group was 37.5% (12/32 patients) compared to 78.1% (25/32 patients) in the control group, and the difference was highly significant (p=0.001) and relative risk was 2.08, 95% CI of relative risk was 1.28-3.38.

Original Article

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Comparison between Dead Space Closure Versus Conventional Closure for Prevention of Seroma after Mastectomy   *Ahmed S et al*
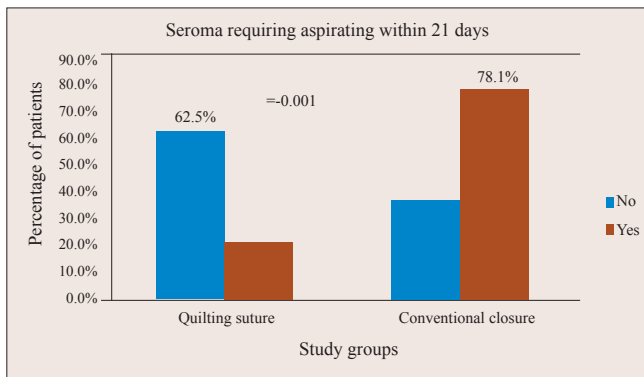
Figure 1 Comparison of wound seroma within 21 days between quilting and conventional closure group

A repeated measure ANOVA was conducted that examined the effect of closure techniques and postoperative days on seroma fluid collection in drain. There was a statistically significant interaction between the effects of closure techniques and postoperative days on seroma fluid collection in drain (p = <0.001). Simple mean effects analysis showed that drain collection significantly reduced from 1st POD to 10th POD in both groups, which is shown in figure II. Significantly higher mean drain volume was observed on 1st POD in conventional closure group compared to quilting suture group, but the mean differences on 5th and 10th POD between groups were not statistically significant.
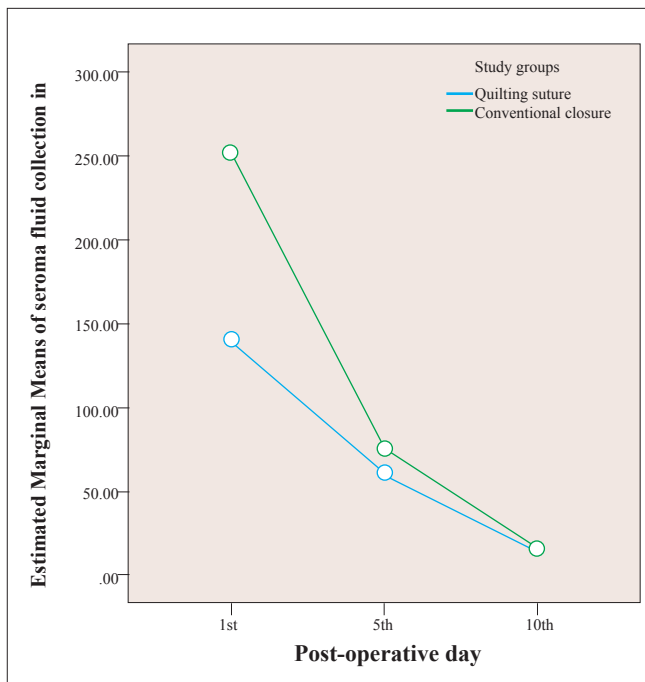
Figure 2 Effects of time and experimental group as independent variables on seroma fluid collection in drain regarding estimated marginal collected fluid means (ml) analyzed using repeated measures ANOVA

Median number of aspiration was significantly higher in conventional closure group compared to quilting suture group (3 versus 0, p=<0.001). Though it was not statistically significant, total volume of aspiration was also higher in conventional closure group compared to quilting suture group (Table III).

Table III Comparison of number of aspiration required and total volume of aspiration between two groups

Variables	Quilting suture (n=32)	Conventional (n=32)	p value
Required Number of aspiration	0 (0-2)	3 (1.25-3)	<0.001‡
Total volume of aspiration			
Nil	20 (62.5)	7 (21.9)	
<100 ml	1 (3.1)	4 (12.5)	
100-300 ml	5 (15.6)	8 (25.0)	0.148*
300-500 ml	4 (12.5)	5 (15.6)	
>500 ml	2 (6.3)	8 (25.0)	

Data were expressed as frequency (Percentage) or Median (IQR) *p value was obtained from Chi-square test, ‡p value was obtained from Mann-Whitney U test.

In terms of surgical site infection and skin flap necrosis incidence was lower in quilting suture group compared to conventional group but the differences were not statistically significant (Table IV). Range of motion and cosmetic outcome at 21^{st}POD were significantly better in quilting suture group.

Variables	Quilting suture (n=32)	Conventional (n=32)	p value
Length of hospital stay, days	4.24 (1.87)	5.43 (1.25)	<0.001
Surgical site infection	3 (9.4)	5 (15.6)	0.445**
Skin flap necrosis	0 (0)	1 (3.1)	0.742**
Range of motion of arm			
Normal	26 (81.3)	10 (31.3)	
Slightly restricted	6 (18.8)	20 (62.5)	<0.001*
Restricted	0 (0)	2 (6.3)	
Unsatisfactory cosmesis at 21^{st}POD	3 (9.4)	10 (31.3)	0.030*

Data were expressed as frequency (Percentage) †p value was obtained from Student's t test, *p value was obtained from Chi-square test,**p values were obtained from Fishers Exact test.

DISCUSSION

This open label randomized controlled trial demonstrated an association between wound closure technique and seroma formation where seroma being significantly higher in conventional suture groupthan in the quilting suture group. This was in line with other studies which showed that quilting suture could reduce the incidence of seroma formation, especially the clinically significant seroma.[18,19,23,26,29,30] Collection of seroma fluid in drain was significantly higher in conventional group specially in 1st POD. Madhu et al reported that total drain amount was significantly lower in quilting group.[26] Mazouni et al. and Myint et al observed that, the mean drain duration and hospital stay were not significantly different between the groups.[23,31] But in our study, total volume of aspiration and the mean hospital stay were significantly lower in quilting suture group. Gong et al also found similar results.[32] Mazouni et al showed that the mean number of required aspirations was similar between the two groups.[23] In contrast our current study showed quilting suture group required significantly lower number of aspirations. This result was comparable to the research of ten Wolde et al.[18] The study of Murugiah et al and Myint et al was comparable to our study showing no significant difference in wound complications between the two groups.[31,33] De Rooij et al found a slightly diminished shoulder function in patients 1 year after mastectomy.[34] In our study quilting did not restrict shoulder movement, rather the range of arm motion was significantly better in quilting suture group.Though recently, De Rooij et al reported no significant difference between the two groups in terms of skin-dimpling 1 year after surgery, our study shows unsatisfactory cosmesis at 21 POD significantly higher in the patients without quilting suture.[34] The promising results of this study can contribute to the growing body of evidence.

LIMITATIONS

Small sample size, short follow-up period were the two important limitations should be kept in mind during considering the study findings. Moreover, the weight of breast tissue was not measured in this study. The cytological analysis of the seroma fluid was not carried out. Lastly, it was an open label study.

CONCLUSIONS

Based on the results of current study, closure of the dead space by quilting sutures following mastectomy will reduce the total volume of drained fluid, seroma formation and the number of aspirations, thus simplifying postoperative management.

RECOMMENDATIONS

We strongly recommend surgeons to perform flap fixation using sutures for patients underwent mastectomy. The effects of flap fixation by quilting suture on long-term quality of life and the cost effectiveness of this trial is ongoing.

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CONTRIBUTION OF AUTHORS

SA - Conception, data analysis, drafting and final approval.
TB - Acquisation of data, interpretation of data and final approval.
MI - Acquisation of data, drafting and final approval.
MSI - Data analysis, interpretation of data, drafting and final approval.
AA - Design, interpretation of data, critical revision and final approval.
TAS - Data analysis, critical revision and final approval.
SMA - Interpretation of data, critical revision and final approval.

DISCLOSURE

All authors declared no conflict of interest.

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Present Status of Health Care Facility Availability and Health Seeking Behavior of Leprosy Patients in A Leprosy Hospital of Bangladesh

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ABSTRACT

Background: Although leprosy is one of the ancient diseases known to humanity and still there are so many misconceptions about the disease in our society. Misunderstanding about the disease lead to stigma towards people with leprosy. Adequate knowledge, positive attitude and good perception of general people towards leprosy would improve hidden case detection rate, eliminate stigma and reduce the physical deformity. The study aimed to explore the health seeking behavior of leprosy patient and to evaluate the availability of health care facility for leprosy patients in a leprosy Centre.

Materials and methods: This cross-sectional study was conducted in Christian Leprosy Centre, Chandraghona, Kaptai, Rangamati Hill Tracts, Bangladeshfrom January 2020 to June 2020.

Results: Among the total 80 leprosy patients, maximum (43.8%) were belonged to 51-60 years and 26.3% of them were agriculturist by occupation. Most of the patients (82.5%) were uneducated and maximum (72.5%) of the patients were from lower class. Most of them (66.3%) had no earlier knowledge about the disease. Only few (20%) of the patients enjoy treatment facility in their locality.

Conclusions: Lower class people's financial condition has a great impact on health seeking behavior. For recurring from the disease we should think about health seeking behavior of the patient.

GRAPHICAL ABSTRACT

Present Status of Health Care Facility Availability and Health Seeking Behavior of Leprosy Patients in A Leprosy Hospital of Bangladesh

Materials and methods	Results		
Cross sectional study	**Demographic characters**	**Available facilities for Leprosy patient**	**Knowledge about Leprosy**
Patients 80	Uneducated 82.5%	Treatment, meal and Residential services 11 (30.80%)	Earlier knowledge on Leprosy 27 (33.7%)
	Up to Primary level 17.5%	Only treatment facilities 16 (20%)	No knowledge 53 (66.3%)
	Lower class 72.5%		
	Middle class 27.5%	Non treatment facilities 64 (80%)	

Conclusion : Poor knowledge regarding Leprosy among index patients. Treatment facilities are also not adequate.

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INTRODUCTION

Leprosy is a chronic granulomatous infectious disease with a long incubation period caused by *Mycobacterium leprae*.[1] Physical disabilities due to leprosy have an impact on social and working life of an individual's, which are also responsible for the social stigma and

prejudice regarding this disease.[2] Patients sometimes delay seeking proper care until they develop physical deformities because of the stigma associated with the Leprosy. Stigma toward persons affected by the disease and their families has also damaged their quality of life due to its impact on their mobility, social activities, interpersonal relationships, marriage, employment, leisure and so on.[3] After India, Brazil and Indonesia, Bangladesh ranks fourth in the world as a leprosy-burdened country according to official records.[4]

Health seeking behavior is a popular concept in recent days, which tries to figure out the cause behind delayed treatment process.[5] Socioeconomic limitation, lack of availability and accessibility of health services, general health problems ignorance, lack of knowledge of leprosy and stigmatization in the general population may prevent people from seeking help. Delay health service may also be related to lack of knowledge, low awareness and skills of healthcare workers. To design an appropriate intervention strategy it's important to recognize what people with leprosy think and why and how they behave will help the programme managers.[6] Christian Leprosy Centre (CLC) is registered under the Social Health and Education Board of the Bangladesh Baptist Church Shanga. In 1913, the first leprosy sufferer arrived at Christian Hospital Chandraghona and from that one patient a service of dedication and compassion grew. Today, CLC continues to be the main center of referral for the treatment of leprosy complications in greater Chittagong division and serves approximately 26 million people.This study was planned to find out the health care facility availability in this setting to find out and early diagnose the hidden cases of leprosy. It explored the barriers and health care seeking behavior of the leprosy patients. It was also planned to explore the current care seeking behavior of the leprosy patients and obstacles behind for not using the system properly and effectively. This study would be make a basis for future extensive research and would be a valuable source of information for the relevant stakeholders in this field.

MATERIALS AND METHODS

This cross-sectional study was conducted in CLC, Chandraghona, Kaptai, Rangamati Hill Tracts, Bangladesh for a period of six months from January 2020 to June 2020. Eighty service providers (Physicians and health workers) and patients of CLC were purposively selected for this purpose.

Data were collected through, verification of availability of health care facility from secondary data, Key informant interviews, In-depth interviews, Focus group discussions, Observations and Informal interviews. Key informant interviews were conducted with the service providers in CLC.In depth interviews were conducted with the service providers in CLC. Focus group discussions were held with health workers and leprosy patients.

Collected data were analyzed with SPSS version 23. Qualitative variables were expressed as frequency (Percentage) and continuous variables were expressed as mean (±SD).

Informed consent was obtained from each participant before enrollment. The study protocol was approved by the Ethical Review Committee of Chittagong Medical University.

RESULTS

The study revealed that 43.8% of patients belonged to 51-60 years of age group. 41-50 years age group contains only 3.8% patient. The mean age was 46.13 years and SD ±13.669 years. Above pie chart shows that 53 (66.3%) were married and 27 (33.7%) were unmarried. Most of the patients 66 (82.5%) were uneducated and only 14 (17.5%) completed their education up to primary level. Above doughnut shows that 58 (72.5%) of the patients were from lower class and 22 (27.5%) of the patients from middle class (Table 1).

Table I Socio-demographic characteristics of the patients (n=80)

Variables		Frequency	Percent (%)
Age, years			
	<30	15	18.8
	31-40	24	30.0
	41-50	3	3.8
	51-60	35	43.8
	>60	3	3.8
	Mean (±SD)	46.13 (±13.669)	
Marital status			
	Unmarried	27	33.7
	Married	53	66.3
Level of education			
	Uneducated	66	82.5
	Up to Primary Level	14	17.5
Socio-economic status			
	Lower class	58	72.5
	Middle class	22	27.5

Data were expressed as frequency (Percentage) if not otherwise mentioned.

Only few 16(20%) of the patients enjoy treatment facility in their locality whereas maximum 64(80%) patients suffer to go the treatment facility. From the table, it can be observed that maximum 45 (56.3%) of leprosy patients received available treatment services, 11 leprosy patients received combined treatment, meal & residential services from health care facility and 3 (3.8%) of the patients did not know about health care facilities (Table II).

**Table II** Facilities available for leprosy patients (n=80)

Variables	Frequency	Percent
Facilities available in hospital		
Treatment services	45	56.3
Treatment and residential services	18	22.5
Treatment and meal services	3	3.8
Treatment, meal and residential services	11	13.8
Doesn't know	3	3.8
Available treatment facility in localities		
Yes	16	20.0
No	64	80.0

The study revealed that out of 80 leprosy patients, only 27 (33.7%) of the patients had earlier knowledge, 56 (70%) of the patients had knowledge about the cause of leprosy, 56 (70%) had knowledge about risk factors of leprosy, 66(82.5%) of the patients had presence of knowledge about symptoms of leprosy, 53 (66.3%) mentioned correctly, 74 (92.5%) had knowledge that leprosy is a curable disease. About the relationship between disability and leprosy majority 74(92.5%) had knowledge that untreated leprosy may produce disability (Table III).

Table III Knowledge of the patients about Leprosy (n=80)

Knowledge domains	Frequency	Percent (%)
Knowledge on Leprosy	27	33.70
Know the cause of leprosy	56	70.00
Know the risk factors	56	70.0
Know the symptoms	66	82.5
Correctly mentioned symptoms	53	66.3
Mention that leprosy is curable	74	92.5
Know that untreated disease cause disability	52	60.70

About specific risk factors for Leprosy above table focuses that among the 56 leprosy patients 27(48.2%) had knowledge and it is due to overcrowding, 19 (Household contact) and 10 (Malnutrition) (Figure 1).
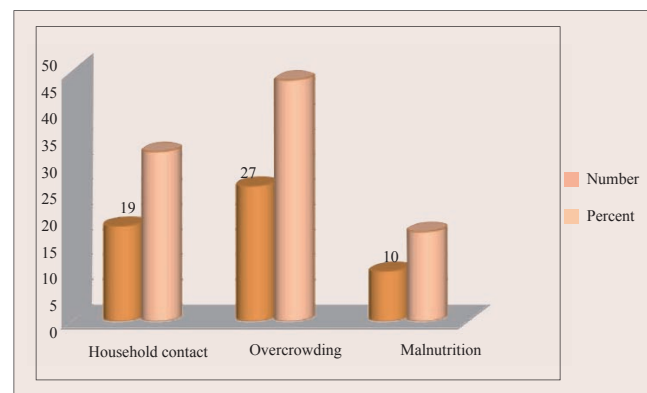
Figure 1 Knowledge of the patients about specific risk factors for Leprosy (n=56)

The study revealed that maximum 71(88.8%) of the patients seek help from expert when leprosy was suspected only few 9(11.3%) concealed due to fear of social isolation. Majority 24 (88.9%) of the respondents received their leprosy related information from govt. health care delivery professional and 11.1% from print media.

Table IV Health seeking behavior and source of information of the Leprosy patients (n=80)

Variables	Frequency	Percent (%)
Action when leprosy suspected		
Seek help from expert	71	88.8
Concealed due to fear of social isolation	9	11.3
Source of information		
Print Media	3	11.1
Government Healthcare		
delivery professional	24	88.9

DISCUSSION

In the present study 18.8% patients were below 30 years of age and maximum (43.8%) patients aged between 51-60 years. About 82.5% participants of this study were uneducated and 17.5% had only primary level of education. Maximum (72.5%) participants belonged from lower socio-economic status and rest from middle socio-economic status. Sharma et al. conducted a similar study among the rural people of Chandigarh with age ranging from 18 years to 68 years where 27.9% were illiterate.[7] This finding is lower than the current study.

Study revealed, only 33.7% patients had earlier knowledge about leprosy. About 3.8% of the participants have come to know about leprosy from print media and 30% from Govt. healthcare delivery professionals. These findings were in agreement with previous findings.[7,8]

Study findings showed, 56.3% participants only availed treatment facility where 22.5% received both treatment and residential facility and 13.8% patients received treatment, residential as well as meal facilities. In a similar study, Ali et al conducted a study in Rajshahi, Bangladesh on 100 participants found 45% took ointment, 35% took homeopathy treatment and only 5% went to hospital for leprosy treatment but in that study other facilities weren't mentioned.[9] Findings are quite different as present study didn't compare the treatment modalities rather compared the availed facilities available for leprosy patients.

Out of 80 patients, 56 (70%) was informed about the risk factors of leprosy where among them 33% could mention household contact is a risk factor, 48.2% mentioned about overcrowding and the remaining 17.90% thought malnutrition is a risk factor specifically. Results of this study showed, 56 (70%) participants had knowledge about the responsible organism for leprosy but 49 (87.50%) could mention it is caused by bacteria.A similar study found, 17.1% of those who had heard of leprosy knew that leprosy is caused by a bacteria and 39.4% of the participants knew leprosy is communicable.[7] Knowledge regarding causation of leprosy of this current study is much higher than the mentioned study findings.

About 66 (82.5%) patients said they had earlier knowledge about the symptoms of leprosy but among them 53 (66.3%) could mention it correctly. Mohite and his colleague conducted a study in India has reported that 81% study participants had correct knowledge of symptoms of the disease including 78.94% participants had overall a good knowledge about leprosy which is quite similar to our present study.[10]

Study demonstrated, 88.8% patients took action when leprosy was suspected and went to doctor or healthcare facility but 11.3% concealed themselves due to social stigma. Samraj et al found 62.8% participants did nothing on having the first symptom of leprosy which is much poor than the current study.[7] In other study, Atre et al. reported that, about 67% patients concealed their disease due to the fear of social stigma in rural Maharashtra, India that is much higher than this study.[11]

Study finding says, about 74 (92.5%) participants believed leprosy is a curable disease.Out of 80 participants, about 74(92.5%) of them had the knowledge that disability is a probable outcome of leprosy and among them 52 (60.7%) thought this disability can be permanent.In a similar study Tabah et al found, 75% of the participants thought leprosy is curable.[8] Sharma et al found, 53.9% of the participants knew leprosy is curable which is lower than the current study.[7] Mankar et al conducted a comparative study that reported 79.3% of the study population was aware that the disease is treatable.[12] Other studies also demonstrated that the knowledge and attitude of the population towards leprosy is still low despite the disease being eliminated from the country.[8,13-19]

LIMITATIONS
Single institution based study with small sample were some of the limited factors which should be kept in mind during consideration of the results of the present study.

CONCLUSIONS
This study revealed poor knowledge regarding leprosy among index patients. Knowledge on mode of transmission, cause and symptoms of leprosy was moderate. Existence of treatment facilities for leprosy in localities of the patients was not so good. Having no knowledge prior of leprosy is one of the major influential factors regarding health seeking behavior. After being identified as patient of leprosy they perceive differently about their disease.

RECOMMENDATIONS
When we are discussing healthcare facilities of leprosy patients we must think that how people take treatment. If we make people conscious and try to teach them about different kind of disease then they feel comfortable about their disease. So, by creating good knowledge and awareness about the health seeking behavior of leprosy, we can able to provide better treatment on leprosy in locally and globally.

CONTRIBUTION OF AUTHORS
MKD - Conception, acquisition of data, drafting and final approval.
FUA - Design, data analysis, interpretation of data, critical revision and final approval.

DISCLOSURE
Both the authors declared that they have no competing interests.

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Morbidity in Laparoscopic Cholecystectomy in Elderly Patients- Is it Higher in Comparison to Adult

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ABSTRACT

Background: The surgical risk in elderly people for laparoscopic cholecystectomy, the gold standard method may increase due to comorbidities and reduced physiological reserve. Complications of surgical treatment of chronic cholecystitis and acutecholecystitis are worse in the elderly. This study conducted to analyze the perioperative morbidity in elderly patient in comparison to adult who will underwent laparoscopic cholecystectomy.

Materials and methods: This was a prospective case control study. We have analyzed the data of all 286 patients, 143 in each group who underwent laparoscopic cholecystectomy for chronic or acute cholecystitis from January 2019 to March 2020 at Marine City Medical College Hospital and other specialized hospital in the Chattogram city. Data collected from selected cases were stratified the into two groups: elderly ($\geq$50 years of age) and younger (<50 years of age). Data related to perioperative mortality in two groups were analyzed and compared. Normally distributed categorical data compared by Chi square test otherwise Fisher's Exact test were used. Numerical data will be compared by Student' t test or Mann whiteny U test. We considered results with p-value=0.05 (5%) as statistically significant.

Results : Mean age is significantly higher in elderly group (57.6084 vs 38.067, p=0.0001). All other base line characteristics are almost equal and statistically insignificant. Operation time in elderly group (38.13 ms vs 32.49 ms, p= 0.0001) early post-operative complications (p= 0.000003301) time to return of bowel sound (28/7, p= 0.0002159) mean hospital stay (38.34 vs 30.26 hours, p=0.00001) and Surgical Site Infection (SSI) (17 /5, p+0.01) are significantly higher in elderly group. Risk of early postoperative complication, morbidity is higher in elderly group (Overall risk is11.54%, risk ratio is 7.25, odds ratio is 8.84)

Conclusion: Study showing higher morbidity rate in elderly who will underwent laparoscopic cholecystectomy. Higher morbidity rate in elderly needs special attention.

GRAPHICAL ABSTRACT

Morbidity in Laparoscopic Cholecystectomy in Elderly Patients : It is Higher in Comparison to Adult

Materials and methods	Results		
Prospective Case control study		**Case**	**Control**
Patients 286	Comorbidity	41	12
	Operation time	38.31 ± 8.56 mins	32.49 ± 5.41 mins
Case ≥ 50 years 143	Intraoperative complication	24	6
Control < 50 years 143	Delay in recovery	11	1
	ICU support	4	0
	Delay returned of bowel movement	28	7
	Mean LOH (Hours)	38.34 ± 8.30 mins	30.28 ± 7.70 mins

Conclusion : Elderly patient had higher operation time, more operative difficulties, more post operative complications and longer hospital stay with overall risk of 11.52%.

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INTRODUCTION

During last couple of decayed number of elderly patient underwent surgery, including Laparoscopic Cholecystectomy (LC) has increased many folds due to increase in life expectancy.[1,2,3] With the increasing of the population longevity, acute and chronic cholecystitis has become a frequent problem in this group. Currently, cholecystectomy for calculus cholecystitis is the most common abdominal operation in the elderly.[4,5]

The incidence of acute cholecystitis and its complications is higher in the elderly.[6,7] In addition, the surgical risk is increased due to comorbidities and reduced physiological reserve.[8] Complications of surgical treatment of chronic cholecystitis and acutecholecystitis are worse in the elderly.[9,10] So preoperative optimization and special perioperative and post-operative care is mandatory to reduce the age related morbidity if any. The aim ofthis study is to compare the morbidity of Laparoscopic Cholecystectomy (LC) in elderly patients with those of younger individuals.

MATERIALS AND METHODS

This prospective case control study included 143 patients in each group those who underwent LC diagnosed as symptomatic gall stone disease by history and clinical examination and confirmed by ultrasound. Participants selected following inclusion and exclusion criteria. Patients and or their relatives briefed about the objectives of the study, risk and benefits, freedom for participating in the study and confidentiality. Patients > 50 years were taken as case and < 50 as control. LC performed under general anesthesia with endotracheal intubation using standard four port technique after appropriate evaluation of patients by taking details history, thorough examination and relevant investigations. All operations were performed by the first author. Also, as a part of our routine protocol, partial pressure of oxygen was recorded in all patients. Preoperative Magnetic Resonance Cholangio Pancreatograme (MRCP) was done in suspected selected cases.

Data recorded in pre-approved case record form emphasizing the base line characteristics, age, gender, clinical and diagnostic tests findings, American Society of Anesthesiology score (ASA). We also recorded operative findings and complications, conversion to open, postoperative complications and mortality, length of hospital stay, and hospital readmission. Laboratory data, CBC, RBS, serum creatinine, serum electrolyte, CXR, USG etc assessed and recorded. All information collected in a questionnaire and checked very carefully to identify the error in the data. Data processing work consist of registration schedules, editing computerization, preparation of dummy table, analyzing and matching of data.

Data arranged first in a master chart in excel. Finally data were filtered, processed and analyzed with the help of computer program IBM SPSS version 23, IBM Corporation and Microsoft excel, version 2017 and Open Epi Version 2013. Quantitative data expressed as mean and standard deviation and qualitative data were expressed as frequency and percentage. Significance were taken at the p = 0.05 level. Chi-square test were performed to compare categorical data if distribution was normal otherwise Fisher's exact test were chosen. Student's t-test or Mann whitny U test for numerical data were performed as per data distribution.

Prior to the commencement of this study, the research protocol was approved by the IRB committee, Marine City Medical College Hospital, Chattogram, Bangladesh.

RESULTS

Mean age in elderly group was 57.6084±3.821(Range: 50-67) and in young 38.067±6.769 (Range 24-50). It is statistically significant (p=0.0001). All other base line characteristics includes sex, BMI, ASA Score, preoperative comorbidities, cardio vascular disease, hypertension, diabetes, pulmonary disease were almost equal and statistically insignificant (Table I).

Operation time in elderly group (38.13 ms vs 32.49 ms, p= 0.0001) (Table-II) early post-operative complications, low oxygen saturation, Upper Respiratory Tract Infection (URTI) Lower Respiratory Tract Infection (LRTI) ICU support (p= 0.000003301) time to return of bowel sound (28/7, p= 0.0002159) mean hospital stay (38.34 vs 30.26 hours, p=0.00001) and SSI (17 /5, p=0.01) are significantly higher in elderly group (Table III).

Other intraoperative complication, adhesion to calot's triangle, difficult dissection of cystic duct and gall bladder, bleeding during dissection was relatively higher in elderly group, but statistically insignificant (Table- II).

Recovery from anesthesia were delayed in 11 patients in elderly group (7.69%). But it is only in one cases in young group. No patients in either group required ICU support (Table IV).

Risk of early postoperative complication, morbidity is higher in elderly group (Overall risk is11.54%, risk ratio is 7.25, odds ratio is 8.84).

Table I Base line characteristics and preoperative comorbidity

	Elderly (>50 yrs)	Young (<50 yrs)	p value
No. of patients	143	143	
Mean age (Yrs)	57.6084±3.821(50-67)	38.067±6.769(24-50)	0.000(s.)†
Male: female	64: 79	71:72	0.404(n.s)‡
Mean BMI	25.97±2.184	26.09±1.941	0.930(n.s.)†
ASA class			
I	111	129	0.5(n.s.)‡
II	32	14	
Comorbidity	41[28.6]	12[8.39]	0.50(n.s.)‡
Cardio vascular disease	11	2	
Hypertension	13	6	
Diabetes	13	3	
Pulmonary disease	4	1	

Values in the parentheses ( ) are range. Values in the [%] is percentage, ASA: American Society of Anesthesiology, ± indicates standard deviation, n s: not significant, s: significant, † Wilcoxon signed ranks test, ‡, Fisher's Exact test. p <0.05 is significant.

Table II Intraoperative data

Variable	Elderly (n=143	Young (n=143)	p value
Operation time (Min)	38.13±8.65(21-71)	32.49±5.41(21-46)	0.0001†
Intraoperative complications % Adhesion &	24(16.78)	6(4.19)	0.5
Conversion	6	2	
Bleeding	7	4	
Delay recovery from anesthesia	11	1	

Values in the parentheses ( ) are range. Values in the [%] is percentage, ± indicates standard deviation, n.s : not significant, s : significant, † Wilcoxon signed ranks test, ‡, Fisher's Exact test. p <0.05 is significant.

Table III Postoperative data

Variables	Elderly (n=143)	Young (n=143)	p value (2-tail)
Early postoperative complications (%)	29(20.270)	4(2.79)	0.000003301(s)ε
Oxygen saturation low- <95% (%)	19(13.28)	3(2.09)	
UTRI	2(1.39)	0	
LRTI	4(2.79)	1	
ICU Support	4(2.79)	0	
Delayed returned of bowel Soundα	28(19.5)	7(4.89)	0.0002159(s) ε
Mean Length of Hospital stay in hours	38.34±8.30(22-72)	30.26±7.73(20-48)	0.00001β
SSI	17	5	0.01β

Values are number, Values in the parentheses are percentage, ± indicates standard deviation, ns : not significant, s : significant, εFisher's Exact test, βWilcoxon Signed Ranks test, p <0.05 is significant, αdelayed > 16 hours.

Table IV Correlation between early post-operative complications in elderly and young

Point Estimates		Confidence Limits	
Type	Value	Lower, Upper	Type
Risk in Elderly	20.28%	14.46, 27.65	Taylor series
Risk in young	2.797%	0.8505, 7.213	Taylor series
Overall Risk	11.54%	8.301, 15.8	Taylor series
Risk Ratio	7.25	2.616, 20.09	Taylor Series
Odds Ratio	8.84	3.019, 25.88	Taylor Series

Risk-Based and Odds-Based Estimates and 95% Confidence Intervals for Early post operative complication in Elderly and Young Group.

DISCUSSION

The laparoscopic cholecystectomy has been accepted as gold standard method for treatment of cholelithiasis even in elderly patients.[11] This is one of the common routine operation performed all over the world. The age of patients is a factor need to consider by the surgeons. It is true that this variable alone is not able to preclude laparoscopy.[12] The most relevant aspect is the presence of comorbidities as age advanced. It is expected that if comorbidities in elderlies could be detected and optimized before surgery risk of LC in elderly could be reduced significantly. In this study we analyzed the perioperative morbidities in elderly patient in comparison to adult who underwent laparoscopic cholecystectomy.

In our studies the average surgical time in elderly and young group was 38.13 vs 32.49 minutes can be considered low compared to other publications.[13-175] In current study all operation were performed by a single surgeon having 22 years' experience in laparoscopic surgery. Reducing operative time is interesting for the elderly patient because it decreases surgical trauma and anesthetic drug use.On the other hand, the delay in conclusion of LC can be a risk factor for postoperative complications. The important thing is that the operation be performed safely, effectively and in a timely manner.

Intraoperative complication, adhesion to calot's triangle, difficult dissection of cystic duct and gall bladder, bleeding during dissection was relatively higher in elderly

group, but statistically insignificant can be considered comparable to other studies.[12-14] In elderly patients history of gall bladder disease is usually prolonged associated with multiple attack leads to more adhesion. Arterial atherosclerosis in elderly may be the cause of more bleeding during dissection. Six (4.19%) patients in elderly group needed to convert to open while two (1.39%) in young group.We note that conversion is related to the following situations: technical difficulty to dissect the structures of the biliary pedicle, acute cholecystitis, bleeding, iatrogenic injury to the bile duct like that of other studies.[15,16]

In this study postoperative data showing the early postoperative complications, low oxygen saturation, UTRI, LRTI, HDU support were higher in elderly group (20.270% vs 2.79%). This morbidity was higher than that reported by several authors.[16-18] The vast majority of perioperative and postoperative complications had little or no impact on the final results. Low oxygen saturation and HDU support in elderly may be related to lower lung function capacity. Delayed returned of bowel sound, more length of hospital stay and SSI is also higher in elderly group.

Risk-Based and Odds-Based Estimates and 95% Confidence Intervals for Early post-operative complication in Elderly and Young Group showing significant higher risk in elderly group. Estimated odds ratio was 8.84.The LC is a safe procedure and consecrated in seniors, but in patients with complicated biliary disease it can be associated with increased postoperative morbidity.[13]

Other studies showing morbidity after LC was more associated with biliary disease severity than with chronological age. In modern erra, LC should be held early, in non-complicated stages, to improve perioperative outcomes.[13]

LIMITATIONS
Analyzed sample was less than expected calculated sample size. It was due to less number of available case during Covid-19 pandemic.

CONCLUSION
In conclusion, elderly patients undergoinglaparoscopic cholecystectomy had higher operation time, more operative difficulties, more post-operative complications, longer hospital stay. Proper preoperative optimizations of comorbidities, special post-operative attention may need for uneventful outcome.

RECOMMENDATIONS
Multicenter with large sample size study is recommended.

CONTRIBUTION OF AUTHORS
SMAA - Conception, design, data analysis, critical revision and final approval.
NN - Acquisition of data, drafting and final approval.
NI - Interpretation of data, critical revision and final approval.

DISCLOSURE
The authors declared no conflicts of interest

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Anti-Microbial Resistance Pattern of Bacterial Pathogens Isolated from Diarrhoea Patient

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ABSTRACT

Background: Diarrhoeal disease continues to be one of the foremost public health issues worldwide. In Bangladesh, one third of the total child death burden is due to diarrhoea. Resistances to currently used antimicrobial agents among enteric pathogens have increased dramatically worldwide during the past decade. This study aimed to identify the etiological spectrum and antibiotic resistance patterns of bacterial pathogens associated with diarrhoea in Chattogram.

Materials and methods: Stool samples were collected from patients attending the in and Outpatient Department of Bangladesh Institute of Tropical and Infectious Diseases during the period of July 2019 to March 2020. Microbiological methods and antimicrobial susceptibility test were used to identify the bacterial causes and antimicrobial resistance patterns in the isolates.

Results: Stools of 241 diarrhoeal patients aged between 01 to 65 years were cultured and 48 (19.9%) samples presented with bacterial growth. Of them 23 (48%) were males and 25 (52%) were females and majority, 18 (37.5%) were between 21-30 years of age. Among the bacterial pathogens Isolated Vibrio cholerae was most prevalent in 35 (72.9%) cases followed by Shigellaspp in 10 (20.93%) and Salmonella in 03 (6.25%). TMP-SMZ was the most resistant drug among all, in Vibrio 97%, Shigella 60% and Salmonella 100%. Vibrio was highly resistant to Erythromycin (80%) and less resistant to Ciprofloxacin (11.4%) and 2.86% to both Azithromycin and Tetracycline. Shigella was also more resistant to Ciprofloxacin (70%), Ampicillin (40%) and less to Mecilinum (20%). Salmonella was the most resistant pathogen among all showing 100% resistance to Azithromycin, 66.6% to Ampicillin and 33.3% to both Ciprofloxacin and Ceftriaxone.

Conclusion: Vibrio is the most common pathogen isolated in this region and all pathogens showed high resistance to TMP/SMZ and should not be used as first line therapy. Active surveillance should be continued to further explore the etiologic spectrum and variation trends in antimicrobial resistance so that earlier and proper intervention can be taken.

GRAPHICAL ABSTRACT

Pattern of Anti-Microbial Resistance of Bacterial Pathogens Isolated from Diarrhea Patient

Materials and methods	Results						
Cross sectional observational study	**Patient characteristics**		**Organism**		**Drug resistance**		
Number of samples 241	Diarrhoeal patient 241		Vibro Cholera 33 (72.9%)		TMP-SMZ	Ciprofloxacin	Others
					97%	11.4%	2.86% (Azithromycin and Tetracyclin)
			Shigella 10 (20.93%)				
					60%	70%	40% (Ampicillin)
	Culture + 48		Salmonella 3 (6.25)		100%	33.3%	100% (Azithromycin) 66.6% (Ampicillin)

Conclusion : Vibrio Cholera is the most common pathogen in diarrhoeal patient. Vibrio, Shigella and Salmonella showed highest resistance to TMP-SMZ.

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INTRODUCTION

Diarrhoeal disease continues to be one of the foremost public health issues worldwide, with more than 1.5 million deaths each year, mostly in children under 5 years of age in industrializing countries. The average diarrhoeal disease incidence is an average of 2–3 episodes per child per year.[1,2] In Bangladesh, one third of the total child death burden is due to diarrhea. Every

year, a rural child suffers on average from 4.6 episodes of diarrhoea, from which about 230,000 children die.[3]

Antimicrobial resistance is now recognized as an increasingly global problem.[4] which was observed for the first time in E. coli in 1940. The primary factor responsible for the development and spread of bacterial resistance is the injudicious use of antimicrobial agents[5]. Resistance to commonly-prescribed antibiotics is an expanding global problem and has been observed in both developed and developing countries. Bacterial infections of the gastrointestinal tract are common and represent a frequent cause of morbidity in outpatients. Most infections are treated on an empirical basis. Clinical experience has indicated the presence of numerous cases resistant to conventional chemotherapy. Microbial resistance rates to commonly prescribed antibiotics have increased recently.

Resistance to currently used antimicrobial agents among enteric pathogens have increased dramatically worldwide during the past decade.[6,7] In developing countries, trimethoprim-sulfamethoxazole, ampicillin and tetracycline are widely used to treat diarrhea because of their low cost and availability.[8] The widespread use of these antibiotics has resulted in an increased prevalence of resistance to these antibiotics by diarrhoeagenic bacteria, thereby raising concern among general practitioners and pediatricians, especially in developing countries.[9]

Updated knowledge of the prevailing causal bacteria and their susceptibility patterns is important for the proper selection and use of antimicrobial drugs and for the development of an appropriate prescribing policy. This study was aimed to identify the prevalence of the etiological spectrum and antibiotic resistance patterns of bacterial pathogens associated with diarrhoea.

MATERIALS AND METHODS

It was a cross sectional, observational study carried out in the Microbiology Laboratory of BITID during the period of July 2019 to March 2020.

Stool samples were collected from patients attending the in and Outpatient Department of Bangladesh Institute of Tropical and Infectious Diseases (BITID) with acute diarrhoeal diseases. Diarrhoea was defined as at least three loose stools in 24 h, any number of watery stools, or one or two loose stools in 24 h accompanied by at least one of the following symptoms: nausea, vomiting, abdominal cramps or fever of 38°C. Or patients with three or more stools with blood and tenesmus.

Total 241 samples were collected from both sexes and different age groups. Informed written consent were duly taken. Data collection was done using structural questionnaire comprised of general information, history of getting antibiotic, clinical findings and check list. Data were recorded in a predesigned data sheet and analyzed by using computer software SPSS (Statistical Package for Social Sciences) v. 20.0 for Windows.The result of the experiment will be recorded systematically and statistical analysis was performed by Chi-Square test.The study was approved by the Institutional Review Board of Chittagong Medical College.

Freshly passed stool were collected in clean dry container. If fresh stool was not available rectal swab were taken by inserting a sterile swab stick into the anus and gently rolling the stick over the rectal mucosa. Swab was then immediately put in a sterile test tube and mouth was sealed with sterile cotton. Stool samples will be inoculated on Deoxycholate Citrate Agar (DCA agar) MacConkey agar and TCBS media and incubated at 37°C for 24 hours. After incubation, plates were checked for presence of desired pathogens. Identification of organisms were done on the basis of their colony morphology, staining characteristics, pigment production, oxidase reaction, citrate utilization, hydrogen sulfide production and other relevant biochemical tests as per standard laboratory methods of identification. Serotyping was done to confirm their identity when required. Samples showing growth of E. coli were considered as normal flora because methods to detect virulence factors of E. coli were not available and they were not included in the study.All the isolates were tested for antimicrobial susceptibility testing by disc diffusion method using the Kirby-Bauer technique and as per the recommendations of the CLSI, 2012.

RESULTS

During the study period, stools of 241 diarrhoeal patients aged between 01 to 65 years were cultured and 48 (19.9%) samples presented with bacterial growth and were included in the study (Figure 1). Growth of E. coli was not taken and was considered as normal flora. Of these 48 patients, 23 (48%) were males and 25 (52%) were females (M: F=1:1.09). Only 3 (6.25%) of them were younger than ten year, while majority 18 (37.5%) were between 21-30 years of age followed by10 (20.8%) in 31-40 years age group and 07 (14.59%) in both 41-50 and above 50 years (Table I). Among the 48 bacterial pathogens Isolated *Vibrio cholerae* was most prevalent pathogen found in 35 (72.9%) followed by Shigella spp in 10 (20.93%) and Salmonella spp. in 03 (6.25%)(Table II).
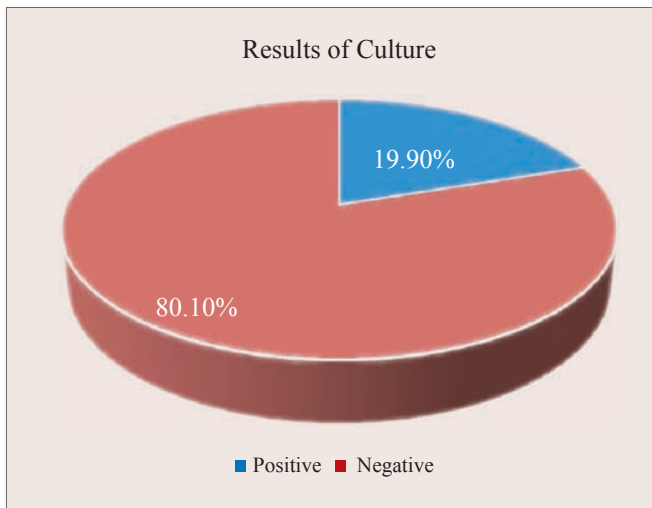
Figure 1 Results of stool culture among the study population

Among 241 patients, 48(19.90%) were culture positive.

**Table I** Age and sex distribution of the positive cases (n=48)

| Age Group | Sex | | Total | |
| | Male | Female | | |
	No (%)	No (%)	No	(%)
1-10	2 (4.17)	1 (2.08)	3	6.25
11-20	2 (4.17)	1 (2.08)	3	6.25
21-30	6 (12.5)	12 (25)	18	37.5
31-40	4 (8.33)	6 (12.5)	10	20.83
41-50	5 (10.42)	2 (4.17)	7	14.59
51 and Above	4 (8.33)	3 (6.25)	7	14.59
TOTAL	23	25	48	

Out of 48 patients who did the stool culture were mostly 21-30 years of age (37.5%). To note that 3 patients were below 10 years of age.

MEAN: 34.6 years (SD ± 14.73)

Table II Distribution of bacterial pathogens Isolated from Stool Culture (n =48)

Name of isolates	Number	(%)
Vibrio cholerae	35	72.92
Shigellaspp	10	20.93
Salmonella spp	03	06.25
TOTAL	48	100

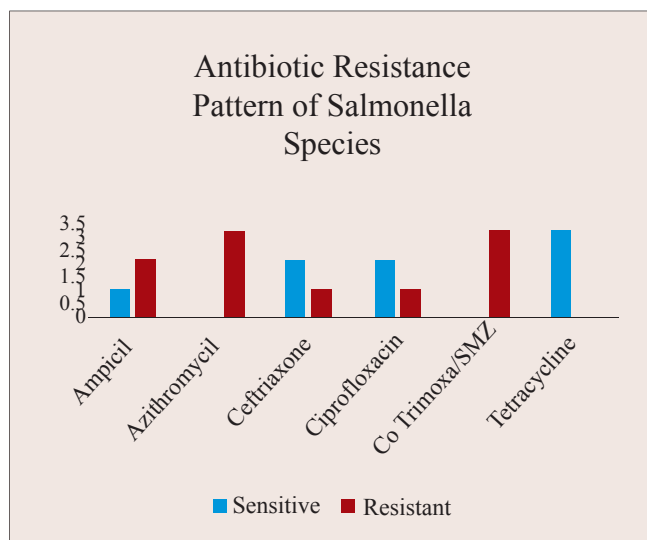Among the 48 bacterial pathogens Isolated Vibrio cholerae was most prevalent in 35 (72.9%) followed by Shigella spp in 10 (20.93%) and Salmonella spp in 03 (6.25%).
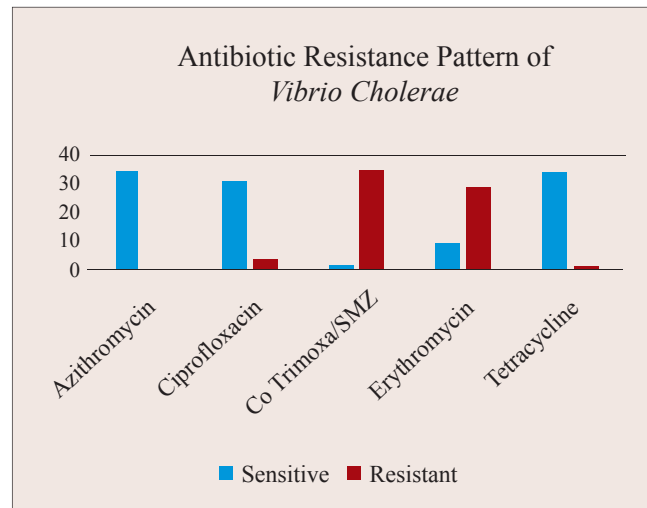
Figure 2 Antimicrobial resistance of the Vibrio cholerae isolated from diarrhoeal stools (n=35)
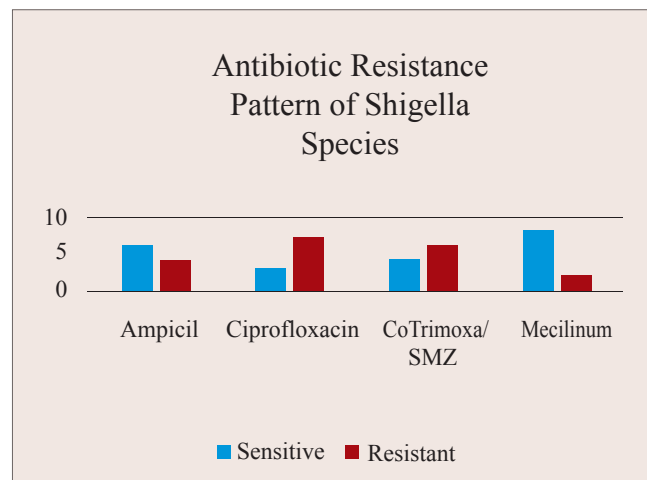
Figure 3 Antimicrobial resistance of Shigella species (n=10)

Figure 4 Antimicrobial resistance of the Salmonella species (n=03)

Considering the resistance pattern of all bacterial pathogens TMP-SMZ was the most resistant drug among all, in *Vibrio cholerae* 97%, Shigella spp. 60% and Salmonella spp. 100%.

Vibrio cholerae was highly resistant to Erythromycin (80%) and less resistant to Ciprofloxacin (11.4%) and only 2.86% to both Azithromycin and Tetracycline (Fig 2).

Shigella spp. was also more resistant to Ciprofloxacin (70%) Ampicillin (40%) and less to Mecillinam (20%)(Fig 3).

Salmonella spp. was the most resistant pathogen among all showing 100% resistance to Azithromycin, 66.6% to Ampicillin and 33.3% to both Ciprofloxacin and Ceftriaxone (Fig 4).

DISCUSSION

Studies in Vietnam revealed 86.4%, 77.2% and 19.1% of E coli isolates were resistant to ampicillin, chloramphenicol and trimethoprim-sulfamethoxazole, respectively, whereas in Egypt the occurrence of antibiotic resistance among E coli isolates from patients with acute diarrhea was 68.2%, 57.2% and 24.2% for ampicillin, trimethoprim-sulfamethoxazole and ampicillin-sulbactam, respectively.[1,10]

In addition, a report from Iran cited by the World Health Organization indicates that sulfamethoxazole-trimethoprim, tetracycline and chloramphenicol were the least effective antibiotics since 112 (80.0%) 90 (64.3%) and 78 (55.7%) of the diarrhoeagenic E coli isolates were resistant to these antibiotics, respectively.[11] Shigella species isolates had the highest rates of resistance to tetracycline (95%) and trimethoprim-sulfamethoxazole (91.7%) and more than 90% of Shigella species isolates were susceptible to cefixime, ceftriaxone, ceftazidime, nalidixic acid, gentamicin, ciprofloxacin and ampicillin-sulbactam.[12] In a study in China for the Salmonella isolates, resistance to nalidixic acid was most common (56%) followed by resistance to sulfamethoxazole (55%) ampicillin (46.8%) streptomycin (44%), tetracycline (29.4%) and chloramphenicol (16.5%). Approximately 50 % of Salmonella isolates were resistant to at least three antimicrobials, 41.3 % were resistant to four, 22.9 % were resistant to five and 12.8 % were resistant to six.[13] In Sudan the percentage of S. dysenteriae type 1 isolates resistant to ampicillin, tetracycline, cotrimoxazole and amoxicillin

was 90%, 86%, 91% and 86% respectively.[14] A study in Calcutta showed 71% drug resistance in V. cholerae O1 strains to ampicillin, chloramphenicol, co-trimoxazole, furazolidone, neomycin, nalidixic acid and streptomycin, while 66% resistance pattern in V. cholerae O139 to ampicillin, furazolidone, neomycin and streptomycin. Of the total 69 strains examined, 14.5%, 10.1% and 11.6% showed resistance to lomefloxacin, pefloxacin and ofloxacin, respectively.[15]

From September 2019 to March 2020, 241 stool specimens from acute diarrhoea patients in indoor and Outpatient Department of BITID aged between 1–65 years were collected and tested. Out of 241 patients 48(19.9%) were culture positive for bacterial pathogens. Similar yield was found in other studies, 20% in a study in China, 13% in Brazil and 10.7% in China[16-18,13]. Higher yield was obtained (66.4%) when in a study in Jordan molecular diagnostic methods were included[19]. The culture positive patients comprised of 23 (48%) males and 25(52%) females (Male: Female ratio = 1:1.09 and Mean age 34 ± 14 years). 52% female patient was also found in a study in Kenya.[20] Similar observation with slight male preponderance (55%) is found in other studies.[15,21] The age distribution showed that majority (37.5%) were in the age group of 21-30 years followed by 20.8% in 31-40 age group. Most of other studies have showed higher number of patients are under five years.[18,22] In this study, the most common pathogenic bacteria associated with acute diarrhea is *Vibrio cholerae* (72.9%) followed by Shigella species (20.9%) and few Salmonella species (6.2%). Similarly, in another study Ahmed et al found *Vibrio cholerae* (42.9%) as predominant pathogen followed by 20% Shigella spp.[23] High Vibrio isolation (57%) was also found in other study in Peru National serosurveillance in 2015-16 has found 17.3% *Vibrio cholerae* 01 across Bangladesh.[21,24] Our high finding may be due to the geographical location of this center in coastal area and salinity of water. Some studies found other pathogens as predominant organisms, Shigella (54%) in Brazil.[18] diarrheagenic E. coli (43%) in China and Salmonella (42.2%) also in China.[13,17] When molecular methods are also used for detection, Rota virus (32.5%) is the predominant pathogen.[19] Regarding antimicrobial sensitivity, *Vibrio cholerae* is 97% resistant to TMP-SMZ, 80% to Erythromycin and sensitive to Azithromycin (97%) Ciprofloxacin (88%) and Tetracycline (97%). Similar findings were found

by Das et al in Bangladesh, in Nepal and also a study in Ghana but another study in Calcutta differs.[25-27,13] Shigella was most resistant to ciprofloxacin (70%) TMP/SMZ (60%) Ampicillin (40%) and least Resistant to Mecillinam (20%). Similar resistance pattern was seen Brazil and Iran.[12,17] Very high resistance was seen in Sudan, China and low resistance in another study in Bangladesh by Parvin et al.[13,14,28]. Salmonella was most resistant pathogen among all with 100% resistant to both TMP/SMZ and Azithromycin and 33.3% resistant to both Ciprofloxacin and Ceftriaxone. Similar high resistance was seen in two studies in China and low resistance in Brazil and Bangladesh.[13,17,18,29]

LIMITATIONS

Limitation of this study was small sample size, single hospital based study and limited time period of the study. Due to resource constraints species of Salmonella and Shigella could not be identified

CONCLUSIONS

Present diagnostic facilities can only detect few common bacterial pathogens. Vibrio is the most common pathogen in this region. Diarrhoea pathogens like Vibrio, Shigella and Salmonella showed high resistance to TMP/SMZ and should not be used as first line therapy. Active surveillance should be continued to further explore the etiologic spectrum and variation trends in antimicrobial resistance so that earlier and proper intervention can be taken to decrease the financial load on the patient and on health care.

RECOMMENDATIONS

Multicentre with large sample size study is recommended.

CONTRIBUTION OF AUTHORS

MSA - Conception, acquisition of data, drafting and final approval.
MMR - Data analysis, interpritation of data and final approval.
HN - Interpritation of data, critical revision and final approval.
RR - Design, acquisition of data, drafting and final approval.

DISCLOSURE

All the authors declared that they have no competing interests.

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Relationship between Nutritional Status and Hemoglobin Level of Reproductive Aged Women in A Rural Community of Bangladesh

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ABSTRACT

Background: Adequate nutritional status of women especially in reproductive age group is important for good health and increased work capacity of women themselves as well as for the health of their off spring. Poor nutrition is indicative of greater health risk to both mother and children born to them. The aim of this study was to assess the nutritional status and hemoglobin level among the women of reproductive age and to find out the relationship between nutritional status and hemoglobin level among the respondents.

Materials and methods: The study was a cross sectional study to assess nutritional status and hemoglobin level of respondent and to find out correlation. The study was conducted within one year commencing from 1st July 2019 at Satkania Upazilla, Chattogram.A total of 132 women of reproductive age were selected consecutively following the inclusion and exclusion criteria. In order to find out correlation between nutritional status and hemoglobin level of the respondents, correlation coefficient was calculated. A low hemoglobin count is generally defined as less than 10 grams per deciliter for reproductive aged women. There was a positive correlation between nutritional status as assessed by BMI and hemoglobin level of the respondents. Data were presented in appropriate tables and diagrams.

Results: Most of the rural women were in the age group of 35-49 years, 73.6 % with mean ($\pm$SD) age of 36.75 ($\pm$9.92) years. 90.9% respondents were Muslim and 25.8% of women had higher secondary level of education. Majority (81.8%) were married. Most of them (56.1%) were home maker. About 66.6% respondents belong to upper middle class and high socioeconomic class. Maximum (43.2%) respondents BMI were within the range of 18.5-22.9 kg/m^2, mean ($\pm$SD) BMI was 22.68 ($\pm$4.22) kg/m$^{2.}$. Among the respondents 33.3% were found to be obese and 14.4% were underweight. Most of the respondents (93.9%) had normal hemoglobin level, median (IQR) Hb (g/dl) was 13.9 (12.5-14.8). It was found that, no significant difference was found among g the BMI categories according to p value. A significant positive correlation between nutritional status and hemoglobin level of the respondents was found in this study (Correlation coefficient r=0.386, p=<0.001). It can be recommended that awareness should be raised among the women of reproductive age group regarding balanced and iron rich diet and to combat anemia. Along with food habit, attention on adequate physical activity, maintenance of optimum BMI, menstrual hygiene and vaccination are mandatory.

Conclusion: It was found that about half of women of reproductive age suffer from abnormal nutritional status.Though no significant difference of hemoglobin level status was found among the BMI categories, this study showed a significant positive correlation between nutritional status as assessed by BMI and hemoglobin level of the women of reproductive age group.

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GRAPHICAL ABSTRACT

Relationship between Nutritional Status and Hemoglobin Level of Reproductive Aged Women in A Rural Community of Bangladesh

Materials and methods	Results			
Cross sectional study	**Demography**		**Proportion of hemoglobin level**	
Sample size : 132	Married : 81.8%		Class	Hb%
				<10
Age : 15 - 49 years	Home maker : 56.1%		Obese 44 (33.3%)	2
	Upper middle class and high socioeconomic status : 66.6%		Under weight 19 (15.2%)	17
			Overweight 12 (9.1%)	2
			Normal 57 (43.2%)	2

Class	Hb%	
	<10	>10
Obese 44 (33.3%)	2	42
Under weight 19 (15.2%)	17	2
Overweight 12 (9.1%)	2	10
Normal 57 (43.2%)	2	55

Conclusion : Under weight had greater chances of anemia. About half of women of reproductive age suffers from abnormal nutritional status.

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Key words: Anaemia; Hemoglobin level; Nutritional status; Reproductive age.

INTRODUCTION

Anemia or low concentration of Hemoglobin (Hb) is a condition in which the number of red blood cells of the body is insufficient to meet physiological needs.[1] Iron deficiency is thought to be the most common cause of anemia worldwide. Children, women of reproductive age and pregnant women are at high risk of developing anemia.[2,3] Maternal anemia is associated with maternal and child morbidity and mortality such, as increased risk of miscarriage, stillbirth, prematurity and low birth weight of the baby.[4] About 20% of perinatal mortality and 10% of maternal mortality in developing countries is attributed to iron deficiency.[5] The prevalence of anemia among non-pregnant and pregnant women is relatively low in high-income countries compared with low-and-middle-income countries.[6] Nutritional status is an indication of the overall well-being of a population. Adequate nutritional status of women is important for good health and increased work capacity of women themselves as well as for the health of their offspring.[7] Poor nutrition is indicative of greater health risk to both mother and children born to them.[8] The health risk it could pose for women necessitates continuous monitoring of their nutritional status and dietary intake especially in poor resource

countries like Nepal. The current literatures provide limited information regarding dietary intake pattern and nutritional important and commonly consumed foods groups and nutritional status of women but not how much food do individuals consume or the average calorie intake. Dietary intake pattern plays a significant role in human health.[9,10]

Improper and inadequate dietary intake pattern especially in women of reproductive age have resulted in the deficiency of essential nutrients especially during pregnancy and lactation in Nepal, where 18% of women are malnourished and 35% are anemic.[11] In addition, reproductive biology, poverty, lack of education, socio-cultural traditions and disparities in household contribute to under nutrition in women.[12] Those women who consume limited animal source foods, fruits and vegetables, increase their risk of micronutrient deficiencies.[13]

Women on low protein and carbohydrate diets can be severely malnourished mothers and are at increased risk of child mortality.[14] Malnutrition, especially undernutrition is prevalent in developing countries and the adverse effects of poor nutrition on pregnancy outcomes have been well documented.[15] Reproductive-aged women are at risk of iron deficiency because of blood loss from menstruation, poor diet and frequent pregnancies.[16] Women are at high risk of inadequate

micronutrient intakes as their diets are of low-quality, lack diversity and are dominated by staple foods.[17] Nutritional status & dietary intake pattern play great role in developing of anemia. As nutritional status of women is a predisposing factor for causation of anemia, study on anemia of women of reproductive age on the background of nutritional status is very important. For this reason, this study was performed.

MATERIALS AND METHODS

This cross sectional study was conducted at Rabeya Memorial Hospital, Satkania, Chattogram, Bangladesh. Study period was from July 2019 to June 2020. A total of 132 women of reproductive age between 15-49 years were selected consecutively following the inclusion and exclusion criteria. Data were collected by face to face interview. A pretested questionnaire was used as data collection tool. Weight was measured by Smile brand weighing machine and height was measured by Fiber-Glass Butterfly brand measuring tape, both are made in China. Hemoglobin estimation was carried out by using the hematology analyzer Erba, Model: CHEM-7 at Rabeya Memorial Hospital, Keranihat, Satkania, Chattogram.A low hemoglobin count is generally defined as less than 10 grams per deciliter for reproductive aged women. Obtained data were preserved in a secure database with strict confidentiality under direct responsibility of the researcher.In order to find out correlation between nutritional status and hemoglobin level of the respondents, correlation coefficient was calculated. IBM SPSS (Statistical Package for Social Science) for Windows (Version 25) was used for the analysis of collected data. There was a positive correlation between nutritional status as assessed by BMI and hemoglobin level of the respondents (Correlation coefficient r=0.386; p=<0.001). Before commencing the study ethical approval was obtained from proper authorities.

Inclusion criteria

*All women of reproductive age who were available at the time of data collection and gave consent for the interview within the age group 15-49 years.

Exclusion criteria

*Women below 15 years and over 49 years
*Who did not give consent.
*Patient with chronic disease with anemia,chronic kidney disease, thalassemia, malaria, tuberculosis, chronic blood loss (Menorrhagia/others).

RESULTS

This cross sectional study was conducted to assess the nutritional status and hemoglobin level among the women of reproductive age and to find out the relationship between nutritional status and hemoglobin level among the respondents. For this purpose, 132 respondents were selected according to inclusion and exclusion criteria.

Table I Sociodemographic characteristics of the respondents

Characteristics		
Age (Years)	Mean (±SD)	36.75 (±9.92)
	Range	15-49
Age category	15-24 years	24 (18.2)
	25-34 years	25 (19.7)
	35-49 years	82 (62.1)
Religion	Islam	120 (90.9)
	Hinduism	6 (4.5)
	Buddhism 6 (4.5)	
Education	Illiterate	22 (16.7)
	Primary 26 (19.7)	
	SSC	30 (22.7)
	HSC	34 (25.8)
	Graduate and above	20 (15.2)
Marital status	Unmarried	14 (10.6)
	Married	108 (81.8)
	Widowed/ Divorced	10 (7.5)
Vocational status	Student	12 (9.1)
	Home maker	74 (56.1)
	Employed outside	46 (34.8)
Monthly family income (BDT)[18]	Low (<6834)	18 (13.6)
	Lower middle (6834-26900)	26 (19.7)
	Upper middle (26900-83166)	44 (33.3)
	High income (>83166)	44 (33.3)
Parity	1-2	50 (37.9)
	3-4	78 (59.1)
	5-7	04 (03)

Data are expressed as frequency (Percentage).

Table I shows that most of the rural women were in the age group of 35-49 years 82% with mean (±SD) age of 36.75 years (Range: 18-49) 90.9% was Muslim and 25.8% of women had HSC level of education. Majority (81.8%) were married. Most of them (56.1%) were home maker. About 33.3% was from upper middle class and high class both. Parity shows, 59.1% patients had 3-4 children and 37.9% patients had 1-2 children.

Table II Nutritional status of the respondents according to BMI

BMI (Kg/m^2)		
Mean (±SD)		22.68 (±4.22)
Range		13.59(33.75)
Nutritional category[19]	Underweight (<18.5 kg/m^2)	19 (14.4%)
	Normal (18.5-22.9 kg/m^2)	57 (43.2%)
	Overweight (23-24.9 kg/m^2)	12 (9.1%)
	Obese (≥25 kg/m^2)	44 (33.3%)

Data are expressed as frequency (Percentage).

Above table shows that maximum (43.2%) respondent's BMI was within the range of 18.5-22.9 kg/m^2, mean (±SD) BMI was 22.68 (±4.22) with the range of 13.59-33.75. According to BMI, 43.2% respondents were within normal and 33.3% was in obese category.

Table III Status of hemoglobin level of the respondents

Hb (g/dl)		
Median (IQR)		13.9 (12.5-14.8)
Range		7.00-15.20
Level of hemoglobin	<10g/dl	8 (6.1%)
	>10g/dl	124 (93.9%)

Data are expressed as frequency (Percentage).

Table III shows that maximum (93.9%) respondents had normal hemoglobin level, median (IQR) Hb (g/dl) was 13.9 (12.5-14.8) with the range of 7.00-15.20.

Table IV Status of hemoglobin levelin contrast to different Socio-demographic criteria

Characteristics		Hemoglobin level status			p value
		<10 mg/dl	10-12 mg/dl	>12 mg/dl	
Age category	15-24 years	2 (12.5%)	4 (25%)	10 (62.5%)	
	25-34 years	2 (6.3%)	6 (18.8)	24 (75%)	0.029
	35-49 years	4 (4.8%)	4 (4.8%)	76 (90.5%)	
Religion	Islam	6 (5%)	12 (10%)	102 (85%)	0.188
	Others	2 (16.7%)	2 (16.7%)	8 (66.7%)	
Education	Illiterate	4 (18.2%)	8 (36.4%)	10 (45.5%)	
	Primary	4 (15.4%)	0 (0%)	22 (86.6%)	<0.001
	SSC	0 (0%)	2 (6.7%)	28 (93.3%)	
	HSC and higher	0 (0%)	4 (7.4%)	50 (92.6%)	
SES	Low	6 (33.3%)	4 (22.2%)	8 (44.4%)	
	Lower middle	0 (0%)	4 (15.4%)	22 (84.6%)	<0.001
	Upper middle	0 (0%)	6 (13.6%)	38 (86.4%)	
	High income	2 (4.5%)	0 (37.5)	42 (95.5%)	
Parity	1-2	6 (12%)	12 (24%)	32 (64%)	
	3-4	2 (2.6%)	2 (2.6%)	74 (94.9%)	<0.001
	5-7	0 (0%)	0 (0%)	4 (4%)	

[a]Includes Santana and Buddhist, SES: Socio-Economic Status.

Table IV shows the association of age, religion, education, SES and parity to hemoglobin level status. Age category, educational status, SES and parity showed statistical significance according to p value.

Table V Proportion of hemoglobin level across the different BMI categories among the respondents

BMI category	Hemoglobin level status		p value
	<10 mg/dl	>10 mg/dl	
Underweight (<18.5 kg/m^2)	2 (10.5%)	17 (89.4%)	
Normal (18.5-22.9 kg/m^2)	2 (3.5%)	55 (96.5%))	0.276
Overweight (23-24.9 kg/m^2)	2 (16.7%)	10 (83.3%)	
Obese (≥25 kg/m^2)	2 (4.5%)	42 (95.4%)	

Table shows the association of BMI category to hemoglobin level status. It showed that, no significant difference hemoglobin level status was found among the BMI categories according to p value.
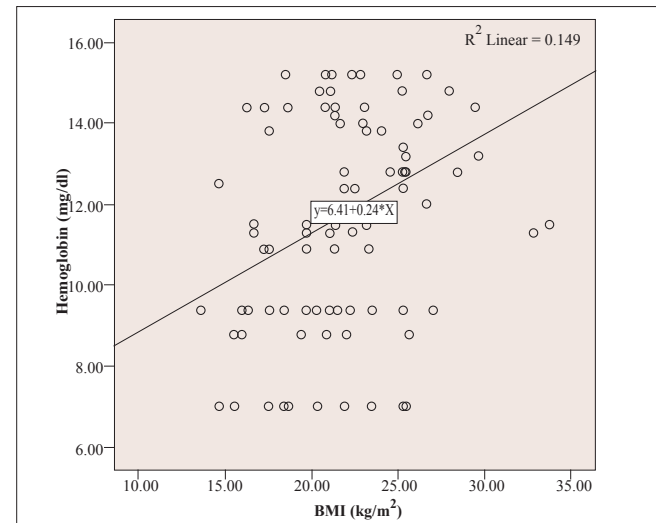
Figure 1 Correlation between BMI and hemoglobin level among the respondents

Figure 1 indicates that there was a positive correlation between nutritional status as assessed by BMI and hemoglobin level of the respondents (Correlation coefficient r=0.386, p=<0.001).

DISCUSSION

In the present study, most of the rural women were in the age group of 35-49 years 82% with mean (±SD) age of 36.75 years (Range: 18-49), (Table I). A recent study by Gautam et al described a total of 6,414 women aged 15–49 years (Mean [±SD] age, 29.2 years [±9.6]) were included in the study.[20] The highest proportion of the women were from the 15–24 years' age group (38%).The range of maternal age was 18 to 43 years with mean age of 26.8±5.302 years and out of

228 mothers 79 (34.6%) were of less than 25 years and 149 (65.4%) were between 25-45 years in the study conducted by Aisha et al[21]. Another study done by Ghose et al found that majority of the participants were aged between 30 and 49 years[22].

According to socio-demographic profile, there were Islam predominance in the study, 90.9% was Muslim and 25.8% of women had HSC level of education. Majority (81.8%) were married. Most of them (56.1%) were home maker. About 33.3% was from upper middle class and high class both (Table I). Majority people had up to secondary education (35%) was, involved in agriculture (47%) and belonged to rich family (43%).[20] Another study done by Ghose et al revealed a quarter of them received no formal education and more than three-fifths of the women had completed primary education. Proportion of women passing secondary/higher secondary school was quite low (7.5%), and about one-third of the women had no formal education. A quarter of the participants were from wealthy families, two-fifths from lower than average and one-third from poor wealth status families. Regarding economic parameters, only 13.5% of the participant had a permanent employment and 27.4% were microcredit borrowers.[22]

Table-II shows that maximum (42.2%) respondent's BMI was within the range of 18.5-22.9 kg/m2, mean (±SD) BMI was 22.68 (±4.22) with the range of 13.59-33.75. According to BMI, 42.2% respondents was within normal and 33.3% was in obese category. A recent study done by Gautam et al revealed that the mean (±SD) BMI was 22.2 (±4.0) and approximately three of the five women (61%) had a normal BMI. Two-thirds of the participants (60.2%) weight were normal, while close to a quarter were underweight (24.5%) and little less than one-fifth were overweight/obese (15.3%).[22]

Regarding the hemoglobin level status, maximum (93.9%) respondent's had normal hemoglobin level, median (IQR) Hb (g/dl) was 13.9 (12.5-14.8) with the range of 7.00-15.20 (Table-III). Gautam et al found that the mean (±SD) hemoglobin level concentration was 12.1 g/dl (±1.4). An overall prevalence of any anemia among women aged 15–49 years was 41%. Specifically, mild anemia was found in 33%, moderate anemia was found in 7% and severe anemia was found in 0.3% of the women.[20] Irrespective of the degree of severity, in total 2363 women (41.7%) were found to be living with anemia.[22]

Concerning the association of age, religion, education, marital status, vocational status and SES to anemia status, it showed that age category, educational status, SES and parity showed statistical significance according to p value. Gautam et al found the prevalence of anemia decreased with the increase in both the age group (i.e 44% among women aged 15–24 years vs. 37% among women aged 35–49 years) having secondary education (43%) unemployed (43%) of middle-class family (49%). The variables that showed significant association ($p < .05$) with anemia status in chi-square tests included age, residency, educational attainment, microcredit membership, access to electricity, potable water and sanitary toilet facilities, total number of childbirths, age at first birth and BMI status.[22]

Regarding the association of BMI category to anemia status, it showed that no significant difference of hemoglobin level status was found among the BMI categories according to p value (Table V). Figure 1 indicates that there was a significant positive correlation between nutritional status as assessed by BMI and hemoglobin level of the studied women (Correlation coefficient r=0.386, p=<0.001). Study conducted by Gautam et al showed that overweight/obese women had reduced odds of developing anemia (aOR 0.64, 95% CI 0.51–0.79) compared to women with normal body weight.[20] Compared with women who were overweight/obese, the odds of being anemic were, respectively, 2.13 and 1.37 times among women who were normal ($p < .001$, 95% CI = 1.819-2.516) and underweight ($p < .001$, 95% CI = 1.208-1.570) in the study done by Ghose et al.[22]

LIMITATIONS

There was language barrier between respondents and data collector. The respondents were hesitating to give blood sample. Some portion of the respondents were unable to provide exact information on age, vaccination etc. Only women of one Upazila of Chattogram division was selected as the survey targets, therefore, our study results have limitations. Finally sample size was too small to make a definite conclusion.

CONCLUSIONS

Adequate nutritional status of women especially in reproductive age group is important for good health and increased work capacity of women themselves as well as for the health of their off spring. Poor nutrition is

indicative of greater health risk anemia to both mother and children born to them. About half of women of reproductive age suffer from abnormal nutritional status.The nutritional status reflected normal BMI among the half of the respondents only whereas the rest of the respondents had abnormal nutritional status either underweight or overweight and obese. It was found that no significant difference was found among the BMI categories according to p value. There was a significant positive correlation between nutritional status as assessed by BMI and hemoglobin level of the respondents.

RECOMMENDATIONS

Awareness can be created regarding balanced diet to combat anemia.It is recommended that maintaining optimum nutritional status during adolescence is important for future reproductive outcome. So, strong effort should be made to improve the nutritional status of females at reproductive age to prevent anemia. Adequate knowledge can be given about healthy eating pattern and life style e.g boiling of water, food choice, cooking and preservation process. Along with food habit, attention on adequate physical activity, maintenance of optimum BMI, menstrual hygiene, vaccination are mandatory. Number of children should be kept limited. To combat anemiait is necessary to treat diseases like melaena, epistaxis, hemoptysis and hematemesis.

CONTRIBUTION OF AUTHORS

AD-Initial research design, conception, acquisition of data, data interpretation, analysis, drafting and final approval.
PPB- Interpretation of data, Critical revision of content and final approval.
HMH-Acquisation of data, data analysis, drafting and final approval.

DISCLOSURE

All the authors declared no conflict of interest.

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A short running head of no more than 40 characters (Including letter and spaces) should be mentioned.

Manuscript

Manuscripts should be in accordance with Vancouver style. The length of the text should be 2500 words for Original Paper, 3000 for Review Article, 1200 for Case Reports and 1000 for Letters to Editor excluding abstract, table, figure and references. Compose text in MS Word in Times New Roman style with the font size of 12 having a double space.

Title Page

● The title of the article should be precise, sensitive and specific.
● It should not be more than 20 words.
● Avoid abbreviations and puncituation mark in title.
● Name of the authors and coauthors with his or her highest academic qualification, designation and institutional affiliation.
● In title case (Not All Capitals) :
  eg. Atlas of Chronic Kidney Disease and End Stage Renal Disorder in United State.

Abstract

Structured abstract should consist of four paragraphs including Background with Objective, Materials and methods, Main Result with Discussion and Principal Conclusion in case of Orginal Article. Articles on clinical trials should contain abstracts that include the items that the CONSORT group has identified as essentials (http://www. consort-statement.org).

For Case Report three paragraphs, including Background with Objective, Case Report and Conclusion. They should briefly describe respectively, the problem being addressed in the study, how the study was perfomed, the salient results and what the authors conclude from the results. Three to six key words should be included below the abstract arranging in alphabetical order. The abstract should not exceed 200 words. Avoid abbreviations and references in abstract.

Text

Original Papers should be divided into sections: Introduction, Materials and methods, Results, Discussion, Limitation, Conclusion, Recommendation, Acknowledgment, Authors Contribution & Disclosure.

The sections of a Review Article should be: Introduction, Search strategy, Discussion, Conclusion & Disclosure. Case Report should be presented in format like: Introduction, Case Report, Images, Discussion, Conclusion & Disclosure.

Introduction

● Word limit 150 (For Case Report) to 500 (For Original Article and Clinical Trail).
● Provide a context or background for the study (That is, the nature of the problem and its significance). It should be very specific, identify the specify knowledge in the aspect, reasoning and what the study aim to answer.
● State the specific purpose or research objective of or hypothesis tested by, the study or observation, the research objective is often more sharply focused when stated as a question.
● Both the main and secondary objectives should be clear.
● Provide only directly pertinent primary references and do not include data or conclusions from the work being reported.

Materials and methods

● Clear and concise description of participants and procedure.
● Study design.
● Duration and place of study.
● Ethical approval.
● Patient consent.
● Statistical analysis.

Results

The Results section should present the collected data and analysis only. Results for all measures should be reported in a concise, straight forward manner, using tables or figures when appropriate. Avoid data redundancy. Do not repeat data of the tables and figures in summarization of result section.

DECLARATION

I/We the undersigned, solemnly affirm that I/We have read and approved the article under the title

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I/We further affirm that :

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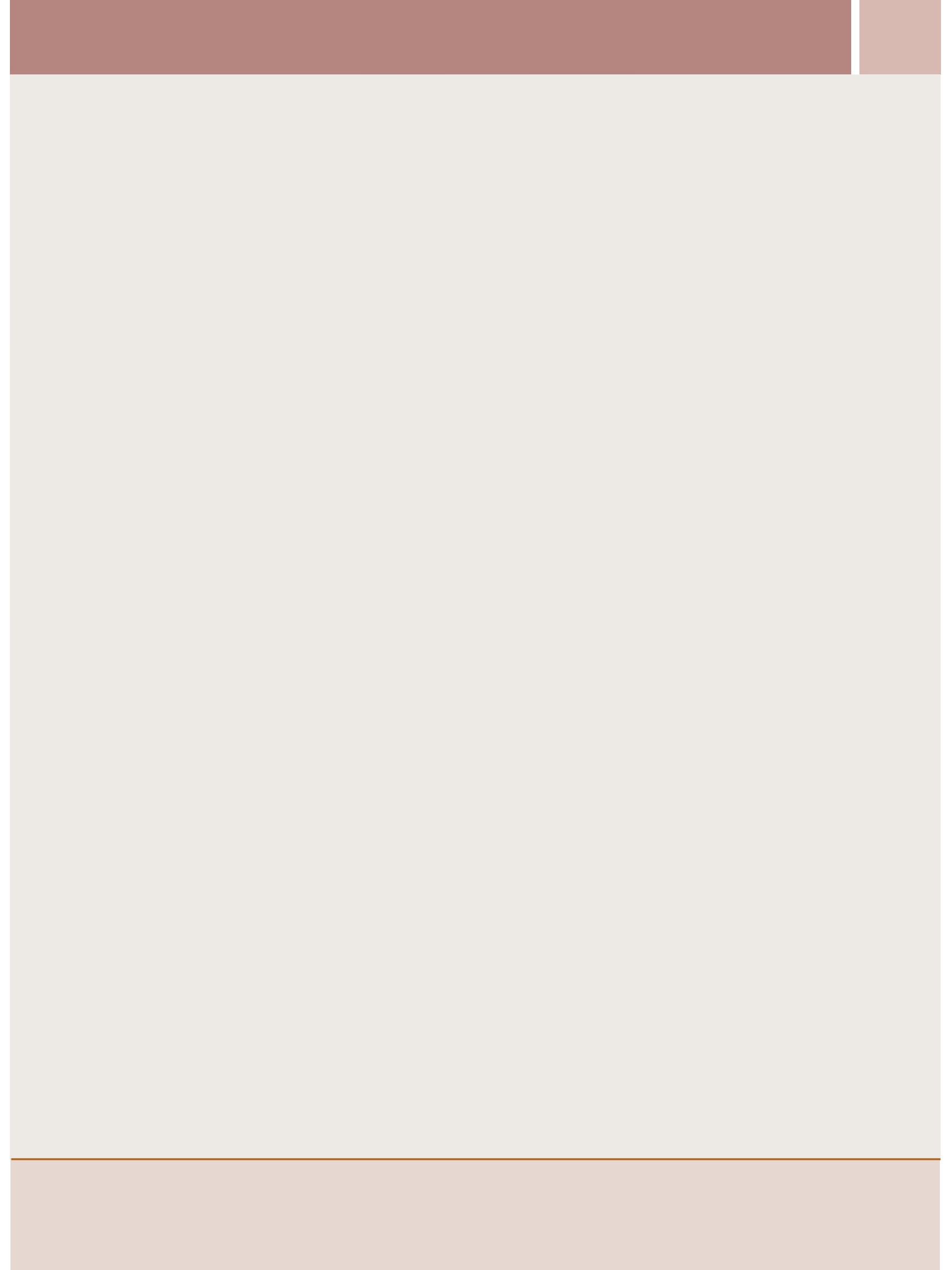
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Tables

They should be prepared on separate pages, to be attached at the end of papers. They should follow the text references following their first citation and numbered consecutively using Roman numericals (eg. Table I, II) on the top of the table followed by a brief title. Authors should place explanatory matter in footnotes, not in the heading. Explain all nonstandard abbreviations in footnotes and use the following symbols, in sequence :

*, †, ‡, §, _, , **, ††, ‡‡, §§, _ _, , etc.

Identify statistical measures of variations, such as standard deviation and standard error of the mean.

Figures

They should be prepared on separate pages, to be attached at the end of papers. They should be numbered using Arabic numericals (e.g. Figure 1, 2) on the bottom of the figure followed by a brief title. In case of already published figure, acknowledge the original source and submit writen pubmission from copyright holder. Legends for figure should be mentioned with the brief title of the figure.

Total numbers of the tables and figure should be within six in Original and Review article. In case of special need there has to be an explanatory note about the extra numbers of tables or figures. In Case report only one table is allowed. No punctuation mark, in the brief title of table & figure.

Discussion

● Avoid unnecessary explanation of someone else work unless it is very relevant to the study.
● Provide and discuss with the literatures to support the study.
● Mention about limitation of your study.

Conclusion

● Give conclusion of your study.
● Any recommendation for future research.

Acknowledgement

● Acknowledge any person or institute who have helped for the study.

Contribution of authors

The persons involved with all the following

i) Initial research design / Conception / Acquisition of data / Data interpretation / Analysis.

ii) Manuscript drafting / Critical revision of content.

iii) Final approval.

Above cited categories must be met. Each author should have participated sufficiently in the work to take public responsibility for appropriate portiions of the content.

Any authors name seemed to be guest and ghost authors, eg. Not relative with discipline of the matter will jeopardise the acceptance of the manuscript.

Disclosure

The authors should disclosed the competing interests or any funding source.

References

References should be prepared in accordance with the Vancouver style. At least 3/5 nos of current references (2018 and above) are to be mentioned with other references in the manuscript. Number of references should be at least 15, but not more than 30 in case of Orginal and Review article. In Case report references should be within the limit of 10 to 15. Number of the references consecutively in the order in which they first appear in the text. Identify them in Arabic numerical Super scripted at the end of the sentences after the fullstop [eg[1,2]].

Book references

Book references : Book references should have the name of the chapter authors, chapter title, editors, book name, the edition, place of publication, the publisher, the year and the numbers of the relevant pages. Mention the name of first six authors, put 'et al' after that if there are more authors. Entries in the list should be numbered consecutively. Personal communications and unpublished works should only be mentioned in the text.

Example : Book reference : Bernstein D. Epidemiology and Genetic Basis of Congenital Heart Disease. In : Kliegman, St Geme, Blum, editors, Nelson Text Book of Pediatrics, 21st edition, Vol-1, Philadelphia, PA, USA : Elsevier, 2016;2367-2371.

Journal refernece : Rahman MM, Giti S, Kabir SMR, Rashid M. Hematiological Changes Associated with Hepatitis by Hepatitis E Virus. Bangabandhu Sheikh Mujib Med Univ J. 2018; 11:291-294.

Internat reference : World Health Organization. Infant and young child feeding. 24 August 2020.
Available from https : //www.who.int/news-room/factsheets/detail/infant and young child feeding. (Accessed on 15th December 2020).

Plagiarism Policy

Before peer review, all the submitted manuscripts are screened by the Plagiarism detector. According to the International Committee of Medical Journal Editors (ICMJE) less than 20% of Plagiarism are accepted for submitted manuscript.