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Editorial ***Open Access***

Neonatal Surgery: A New Era and Challenge in Pediatric Surgery

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Neonatal surgery is critical but rewarding now a day due to better understanding of the neonatal physiology, improved surgical skill, multidisciplinary team involvement and better technical support available in NICU. Congenital anomalies are quite frequent in newborn due to developmental errors and form the main bulk of surgical load in neonatal period[1]. In some areas congenital malformation alone contribute 40% of the surgical cases in a neonatal surgery unit[2]. Neonatologists and pediatricians are commonly the first to attend these cases before the Neonatal surgeons. Pediatric surgeon come into the scenario for surgical management and they along with pediatric anesthetist form a team to ensure temperature regulation, fluid- electrolyte balance, adequate respiration and improvement of metabolic derangement to augment surgical success[3]. Adequate preparation before surgery and optimal post-operative management are crucial for success in surgery.

The neonatal period is the riskiest period in childhood. Neonatal death constituted more than one third of the children death under 5 years in 2000. About 2.5 million neonates died in 2017 alone around the globe. Most of them died in the 1st week and around 1 million on the 1st day[4]. Congenital malformations are the 4th common cause of death in neonatal period and most of them are correctable now[5]. Survival rates of neonatal surgery improved in the last half of 20th century due to improvement in neonatal intensive care, advances in technology, better anesthetic support and skilled surgical care in developed countries[6]. But the underdeveloped and developing countries are confronted with inadequate trained personnel and equipment, late presentation and inadequate findings by the parents and the national stakeholders[3].

Neonatal surgery is usually done for correction of congenital anomalies that are present at birth due to genetic, environmental factors, or a combination of both[8]. Maternal and fetal predisposing factors include- consanguinity, maternal obesity or under nutrition, positive family history, history of subfertility or fetal loss, prematurity, or low birth weight. Birth defects that need surgical correction at the neonatal period include anomalies of circulatory (atrial septal defect, ventricular septal defect), alimentary (atresia, stenosis of esophagus, intestine), nervous, respiratory, musculoskeletal, urinary system; also, congenital diaphragmatic hernia and defects of the abdominal wall[2,7] The challenges in neonatal surgery require adequate knowledge and higher surgical skills to proceed beyond common surgical techniques. Hemodynamic and respiratory status, fluid electrolyte state, and higher risk of infection must be addressed dynamically for better surgical outcomes[6]. The incidence of birth defect requiring surgery varies widely round the globe due to genetic, environmental and nutritional factors. Estimated prevalence ranges from 2-3% in developed countries to 7% in developing countries. Throughout the world about 1.6% neonates are born with congenital anomalies that may be lethal/ disabling if not detected early and addressed appropriately[11]. The neonatal surgeries performed in pediatric surgery units in Bangladesh include-anorectal malformation, intestinal atresia, Hirschsprung's disease, omphalocele, gastroschisis, meconium ileus, posterior urethral valve, volvulus neonatorum, infantile hypertrophic pyloric stenosis, congenital diaphragmatic hernia, esophageal atresia, ectopia vesicae, neonatal injuries etc[4]. Neonatal intestinal obstruction (NIO) due to several congenital or acquired reasons is one of the most frequent reasons requiring surgical intervention in neonate. Polyhydramnios in mother, dilated gut at fetal ultrasonography and family history of Hirschsprung's disease and cystic fibrosis aid the diagnosis of NIO.

Neonates requiring surgery are in a state of adaptation to the extrauterine environment; their unstable homeostasis, complex congenital anomalies and surgical stress and anesthesia put them in great jeopardy[9]. In developed countries antenatal diagnosis, fetal surgery, planned maternal care, better pediatric anesthetic and neonatologist support in modern NICU and timely surgical intervention have improved the outcome. But in developing countries often antenatal diagnosis is not possible as presentation is late, resources are limited and trained manpower is not available. Recently with the development of medical facilities throughout the country, neonatal surgery is coming up as a subspecialty in pediatric surgery.

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References

1. Nyong EE, Uwah UE, Udoh JJ, Essien PU, Akhimeinho KI. Pattern of Neonatal Surgical Admissions in University of Uyo Teaching Hospital (UUTH), Uyo. Acta Scientific Paediatrics 4.5. 2021: 19-23.

2. Ameh EA, et al. "Neonatal Surgical Care. A review of the burden, progress and challenges in sub-saharan Africa". Pediatrics and International Health 35.3. 2015: 243-252.
3. Bagga D. "Neonatal Surgery." Journ Neonatal 21.4. 2007.
4. Hanif A, Hasina K, Rouf MA, Islam KMS, Ferdous NS, Khan JG, Huq A. Neonatal Surgery: Demand and Survival Both are on Increase- an Experience of Seventeen Years in Dhaka Medical College Hospital, Bangladesh. Bangladesh Med Res Counc Bull 2020; 46:05-11.
5. Lawn JE, Cousens S, Zupan J: Lancet Neonatal Survival Steering Team. 4 million neonatal deaths: when? Where? Why? The Lancet 2005; 365: 891-900.
6. Broche-Candó RC, Sosa-Palacios O, Morales-Mesa E, Pla-Ampudia M, Reyes-Romero O, Pérez-Moré MA. Neonatal Surgery Case Fatality and Associated Factors in a Cuban Pediatric Hospital, 2005–2015. MEDICC Review, April–July 2017, Vol 19, No 2–3.
7. Yun SW. Congenital heart disease in the newborn requiring early intervention. Korean J Pediatrics. 2011 May;54(5):183-191.
8. Murray CJ, Vos T, Lozano R, Naghavi M, Flaxman AD, Michaud C, et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 2012 Dec 15;380(9859):2197–223.
9. Kuebler JF, Ure BM. Minimally invasive surgery in the neonate. Semin Fetal Neonatal Med. 2011 Jun;16(3):151–6.
10.Gattett L, Jeffrey K, Michael M. Use of MRI and UUS in the antenatal diagnosis of placenta accrete. J Soc Gynecol Invest 2002; 9: 37-40

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Original Article ***Open Access***

Breast Ultrasound as A Primary Imaging Modality for Detection and Evaluation of Breast Lesions: A Study in Combined Military Hospital, Jashore

Towhida Khan[1], Mohammed Mominul Hoque Sarker[2], Tonima Talukder[3]

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Abstract

Background: Detection of breast lesions is very important. **Objective:** The purpose of this study was to evaluate the role of breast ultrasound for primary imaging evaluation of women who present with breast signs or symptoms. **Methodology:** In this cross-sectional study, we included 642 women of the age group between 20 to 70, who underwent ultrasound evaluation at Combined Military Hospital, Jashore, Bangladesh during the period of January 2022 to December 2022 for breast signs or symptoms. We took proper history evaluated the patients for positive or negative USG findings and sent for the next imaging/ biopsy and or follow-up. Overall cancer yield, sensitivity, specificity, negative predictive value (NPV), and positive predictive value (PPV) of ultrasound were calculated. **Results:** The total cases of the study were 642. Outcomes were negative or benign in 630 out of 642 (98.1%) and malignant in 12 out of 642(1.9 %) cases. Sensitivities for ultrasound were 95.7% and specificities were 89.2%. NPV was 99.9 % and PPV was 13.2% for ultrasound. **Conclusion:** USG of breast acts as an important primary tool of investigation in symptomatic women. *[Journal of Army Medical College Jashore, July, 2023;4(2):52-56]*

Keywords: Breast imaging; ultrasound; mammography; Magnetic Resonance Imaging; Breast Cancer; BI-RADS

Introduction

Imaging plays an active role in the evaluation of breast disease because clinical breast examination alone is not reliable in differentiating benign from malignant lesions[1-2]. Breast ultrasound (US) is one of the four main methods for detecting breast diseases, together with mammography, magnetic resonance imaging (MRI), and image-guided biopsy.

The importance of ultrasound for detection of breast cancer has been a controversial topic for many years. Depending on equipment standards, clinical objectives, and skills of medical professionals; the interpretation of its role becomes variable.

The first experimental ultrasound of the breast started about 60 years ago. In the early stage, ultrasound was limited to differentiate palpable cysts from solid lesions[1]. With the development of modern equipment in the last 15 years ultrasound has been used for the accurate detection and diagnosis of even small breast lesions[2-3]. To minimize the ongoing debate about the use of ultrasound, Stavros et al. published a study with modern high-resolution breast ultrasound, using standardized diagnostic criteria for differentiation of breast lesions[4]. Many other groups, at the same time also started to evaluate the advantages of ultrasound in patients with dense breasts for the detection of non-palpable and mammographically occult lesions[5-7].

Because of radiation concerns, the relatively poor performance of mammography, and the low incidence of breast cancer in young women, ultrasound is the primary modality used to evaluate symptomatic young women, whereas mammography is used as the primary modality in older women[3-4]. However, the current American College of Radiology (ACR) recommends mammography as the primary imaging modality in women 30 years and over, and ultrasound is reserved as the primary modality for women under 30 years[6]. The purpose of this study was to evaluate the role of breast ultrasound for primary imaging evaluation of women who present with breast signs or symptoms.

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Methodology

Study Design: This cross-sectional observational study was done in Combined Military Hospital, Jashore, collection of patient data period from January 2022 to December 2022. This study was approved by the Ethical Committee of Combined Military Hospital, Jashore, Bangladesh.

Study Population: A total of 642 patients came to the Radiology & Imaging Department for ultrasonography of breast from various outdoors of Combined Military Hospital, Jashore. Retrospectively 642 cases of women between 20 to 70 years age group were included in this study (Table 1). Patients with BI-RADS category 6 lesions (histopathologically diagnosed cancer cases) were excluded from the study. We recorded the patient's age; presenting signs or symptoms (lump, pain, skin changes); and imaging findings, including lesion visibility on ultrasound and ACR BI-RADS assessments.

Imaging and Image Interpretation: Ultrasound examinations were done using a SAMSUNG, HS40 machine with a 12-MHz linear transducer. All ultrasound examinations were performed by a radiologist, and interpreted by another radiologist. At the time of ultrasound evaluation, the radiologist mentions the location (clock position and distance from the nipple), size and imaging characteristics of the lesion, BI-RADS assessments, and next recommendations.

Patient Management: If the diagnostic evaluation was negative (BI-RADS category 1) and benign lesions like simple cysts or involuting fibroadenoma, BI-RADS category 2), no additional imaging or tissue sampling was recommended. Clinical follow-up was recommended by the referring clinician. If an evaluation was not negative or benign, management was based on the imaging characteristics of the identified findings and was at the discretion of the interpreting radiologist. The lesions that were deemed probably benign (less than 2% risk of malignancy) were categorized as BI-RADS category 3. For BI-RADS category 3 lesions, short-interval follow-up ultrasound was recommended in 6, 12, and 24 months. For calcifications, focal asymmetries, or masses with suspicious or highly suggestive characteristics (BI-RADS category 4 or 5), core needle biopsy (CNB) was recommended. The percentage of cases in each BI-RADS assessment category was calculated based on the results of the initial ultrasound evaluation (Table 3). Overall cancer yield was calculated and was defined as the percentage of cases with pathologically confirmed malignancy. The sensitivity, specificity, negative predictive value (NPV), and positive predictive value (PPV) of ultrasound were calculated following guidelines from the BI-RADS atlas[8].

Statistical Analysis: The p-value was measured by the Chi-Square Test. Mean ± standard deviation by Standard Deviation Calculator.

Results

A total of 642 symptomatic women of the 20 to 70 years age group were included in the study. An ultrasound examination of the breast was performed in the study interval. Of those cases, the patient's sign or symptom being evaluated was a palpable lump in 225 (35.04%), pain in 144(22.43%), palpable lump with associated pain in 232 (36.14%), and focal skin changes in 41 (6.39%) (Table 2).

Total cases were 642. Outcomes were normal &benign in 630 of 642 (98.1%) and malignant in 12 of 642 (1.9 %) cases. Sensitivities for ultrasound 95.7% and specificities 89.2%. NPV was 99.9 % and PPV was 13.2% for ultrasound

Table 1: Age distribution of patients (n= 642)

Age Group	N(%)
20 to 30 Years	118(18.38%)
31 to 40 Years	241(37.54%)
41 to 50 Years	229 (35.67%)
51 to 60 Years	42(6.54%)
More than 60 Years	12(1.87%)
Total	**642(100.0%)**

Table 2: Distribution of Patients according to their Signs & Symptoms

Sign & symptoms	Frequency	Percent
Palpable lump	225	35.1
Pain	144	22.4
Painful palpable lump	232	36.1
Focal skin change	41	6.4

The total no of the patient was 642, negative & benign cases were 630, and malignant cases were 12 (Figure I).

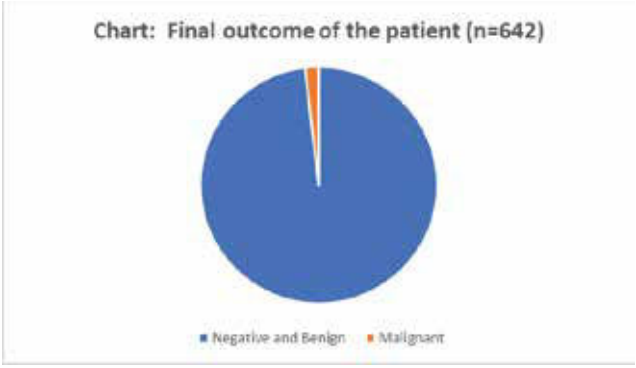

Figure I: Pie chart showing Final Outcome of the Patients

The BI-RADS assessment was category 1 for 218 (33.96%) cases. The BI-RADS assessment was category 2 for 257 (40.03 %) cases. The BI-RADS assessment was category 3 lesions for 145 (22.59%) cases. The BI-RADS assessment was category 4 lesions for 18 (2.80%) cases. The BI-RADS assessment was category 5 lesions for 04 (0.62%) cases (Table 3).

Table 3: Outcome of cases as per BI-RADS assessment of women undergoing breast ultrasound(n= 642)

BI-RADS Assessment	Total (%)
Category 1 (Negative)	218 (33.96%)
Category 2 (Benign)	257 (40.03%)
Category 3 (Probably benign)	145 (22.59%)
Category 4 (Suspicious)	18 (2.80 %)
Category 5 (Highly suggestive of malignancy)	04 (0.62 %)
Total	**642 (100%)**

Finally, 630(98.1%) cases were assessed as negative or benign, and 12(1.9%) cases were diagnosed as malignant lesions. None of these BI-RADS 1 and BI-RADS 2 category cases were found to be malignant within 1 year follow-up. Only 1 case of 145(22.6%) of BI-RADS 3-category cases was assessed by mammography and ultrasound at the time of clinical follow-up. Based on increased size and clinical suspicion, an ultrasound-guided biopsy was done and revealed an infiltrating ductal carcinoma. Of all the cases, 18 (2.80 %) of BI-RADS category 4 (Figure I) underwent biopsy, and of them, 07 cases were found to be malignant, rest were benign. The BI-RADS category 5 of04 (0.62 %) cases (Figure II) were subsequently biopsied and were found to be malignant.

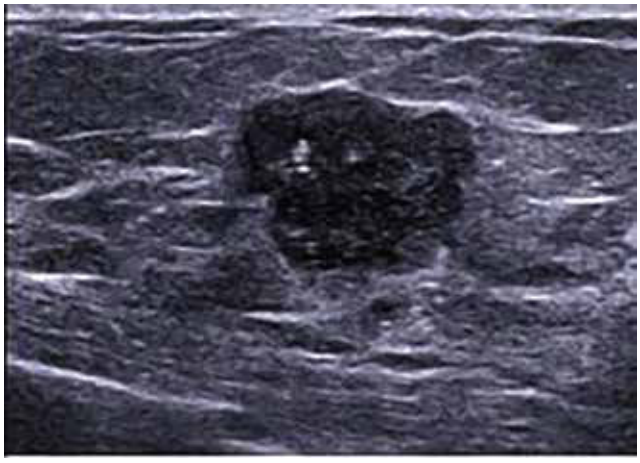

Figure II: 41 years old woman who presented with a palpable right breast lump

The ultrasound image revealed a solid mass with lobulated margins. BI-RADS 4 assessment was made. Histopathology from ultrasound-guided core needle biopsy showed benign fibroadenoma.

Ultrasound image shows a solid mass with an irregular shape and indistinct and angular margins. BI-RADS 5 assessment was made. Histopathology from ultrasound-guided core needle biopsy showed invasive ductal carcinoma.

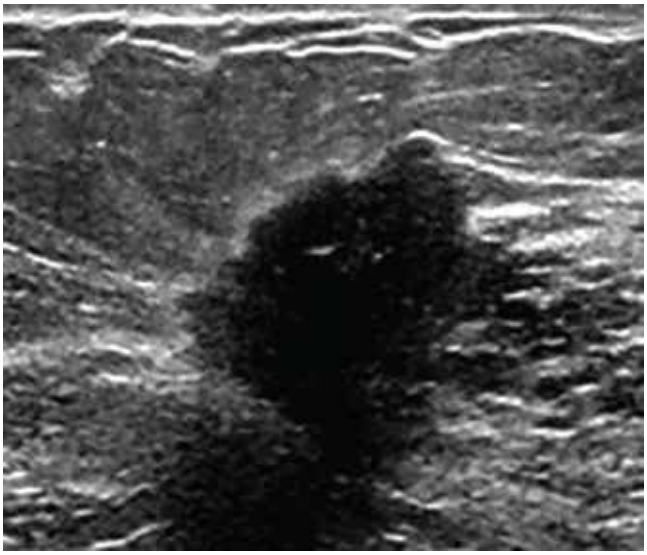

Figure III: 37 years Old Woman Who Presented with Palpable Left Breast Lump

Discussion

Ultrasound is an important and safe imaging modality for the assessment of symptomatic women of all age groups. In our study out of the 12 malignancies, 11 cases were detected by ultrasound and confirmed by histopathology. Our results show that breast ultrasound has 95.7% sensitivity for cancer detection and 99.9% NPV, substantiating it as a primary imaging modality for this patient cohort. In addition, both the specificity and PPV of biopsied lesions in our study did not significantly differ from ultrasound findings. No malignancies were detected by mammography alone at the site of clinical concern.

Our study also confirms the very low incidence rate of malignancy (1.9%) among women in our study cases. This finding is consistent with prior reports that show the incidence of breast cancer to be as low as 1% for the age group of 30 to 39 years[3-4]. Furthermore, we found that the vast majority of women presenting with focal breast concerns in our study had a negative examination or benign finding at the time of imaging workup (98.1%), confirming prior reports of similar patient populations[4,9].

The results of our study imply to reduction in the costs, potential anxiety of patients, and radiation exposure associated with mammography in women for diagnostic breast imaging. Since its foundation, the ACR has been working on establishing the appropriateness of imaging examinations for specific patient populations and eliminating unnecessary radiation exposure. Although the impact of radiation from mammography on cancer risk is widely debatable, it is clear that patients should be exposed to radiation only if the benefits of the imaging test outweigh the potential and real risks.

In our study, nearly all BI-RADS category 1, 2, and 3 masses were found to be benign on imaging or follow-up. Assuming appropriate use of BI-RADS criteria, our results suggest that

clinical follow-up for categories 1 and 2 and short-interval imaging follow-up for category 3 lesions are safe practices. Furthermore, the use of ultrasound as a primary diagnostic tool and imaging follow-up, thus preventing economic costs and patient morbidity[10-14].

Our results should not decrease the need for an imaging evaluation to identify the few breast cancers that are present in women. Rather, our study suggests that adjunct mammography be used in appropriate situations of high clinical suspicion of malignancy, including for patients with highly suspicious lesions according to ultrasound or those at higher risk due to known genetic mutation or strong positive family history.

Ultrasound has a high diagnostic ability in differentiating breast cancer from benign lesions, in preoperative assessment, and even in the detection of early cancers that are mammographically and clinically occult. The advantage of breast ultrasound compared to mammography increases with higher breast density and in young women where the sensitivity of mammography is low. This is an important issue as dense breast tissue is very common. More than half of the women younger than 50 years have heterogeneously dense (50 to 75%) or very dense (more than 75.0%) glandular breast tissue[15]. One-third of women older than 50 years have also dense breasts[15] and the sensitivity of mammography in women with dense breasts is as low as 30 to 48%[16-17]. The interval cancer rate is highly increased in this group17-18 and dense breast tissue is itself a marker of increased risk of breast cancer in the order of 4 to 6-folds[18-20].

Limitations of The Study: There are several limitations to our study. This is a retrospective analysis from a single institution. Furthermore, our ultrasound examinations were performed by radiologists, which may not be possible in the community setting. In addition, a large proportion of patients with BI-RADS category 3 lesions did not complete the recommended 24 months of imaging follow-up or undergo biopsy.

Conclusion:

Diagnosis of breast cancer has been widely improved since the development of high-resolution ultrasound equipment. Ultrasound is a safe and widely available method for breast imaging. It is the method of choice especially when assessing young women (under age 30) with a palpable lump and a complementary method after mammography in older women with a palpable lump. Breast cancer screening with breast US alone is not encouraged, while mammographic screening for breast cancer is important, mammographic screening does not solve all breast problems, and supplemental screening with US may be an option to be considered for women with dense breasts. As in women with dense breasts, the risk of breast cancer development is increased and the sensitivity of mammography is diminished, while ultrasound has much higher sensitivity. Therefore, if mammography is performed, the breast density should always be reported and additional ultrasound should be considered. Besides ultrasound improves the differential diagnosis and local staging and acts as a useful guide for interventions.

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Conflict of interest
No conflict of interest.
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Authors' Contributions
Lt Col Towhida Khan and Lt Col Mohammed Mominul Hoque Sarker conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript. Major Tonima Talukder was involved in the manuscript review and editing. All authors read and approved the final manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

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References

1. Rosner D, Blaird D. What ultrasonography can tell in breast masses that mammography and physical examination cannot. J Surg Oncol 1985; 28:308???313
2. Boyd NF, Sutherland HJ, Fish EB, Hiraki GY, Lickley HL, Maurer VE. Prospective evaluation of physical examination of the breast. Am J Surg 1981; 142:331???334
3. Hankey BF, Miller B, Curtis R, Kosary C. Trends in breast cancer in younger women in contrast to older women. J Natl Cancer Inst Monogr 1994; 16:7???14
4. Foxcroft LM, Evans EB, Porter AJ. The diagnosis of breast cancer in women younger than 40. Breast 2004; 13:297???306
5. Willett AM, Michell MJ, Lee MJ, editors. Best practice diagnostic guidelines for patients presenting with breast symptoms. Breakthrough Breast Cancer/Department of Health Website. www.dh.gov.uk/publications. Gateway reference 13737. Published 2010. Accessed June 21, 2012
6. Parikh JR. ACR Appropriateness Criteria on palpable breast masses. J Am Coll Radiol 2007; 4:285???288
7. Osako T, Iwase T, Takahashi K, et al. Diagnostic mammography and ultrasonography for palpable and nonpalpable breast cancer in women aged 30 to 39 years. Breast Cancer 2007; 14:255???259

8. American College of Radiology. Breast Imaging Reporting and Data System (BI-RADS). Reston, VA: American College of Radiology, 2003
9. Kerlikowske K, Smith-Bindman R, Ljung BM, Grady D. Evaluation of abnormal mammography results and palpable breast abnormalities. Ann Intern Med 2003; 139:274???284
10. Georgian-Smith D, Taylor KJ, Madjar H, et al. Sonography of palpable breast cancer. J Clin Ultrasound 2000; 28:211???216
11. Morrow M, Strom EA, Bassett LW, et al. Standard for breast conservation therapy in the management of invasive breast carcinoma. CA Cancer J Clin 2002; 52:277???300
12. Bassett LW, Kimme-Smith C. Breast sonography. AJR 1991; 156:449???455
13. Feig SA. Radiation risk from mammography: is it clinically significant? AJR 1984; 143:469???475
14. Harvey JA, Nicholson BT, Lorusso AP, Cohen MA, Bovbjerg VE. Short-term follow-up of palpable breast lesions with benign imaging features: evaluation of 375 lesions in 320 women. AJR 2009; 193:1723???1730
15. Stomper PC, D'Souza DJ, DiNotto PA, Arrendondo MA: Analysis of parenchymal density on mammograms in 1353 women 25–79 years old. AJR Am J Roentgenol1996; 167:1261–1265.
16. Kolb TM, Lichy J, Newhouse JH: Comparison of the performance of screening mammography, physical examination, and breast US and evaluation of factors that influence them: an analysis of 27,825 patients' evaluations. Radiology 2002; 225:165–175.
17. Mandelson MT, Oestreicher N, Porter PL, et al.: Breast density as a predictor of mammographic detection: comparison of interval- and screen-detected cancers. J Natl Cancer Inst 2000; 92:1081–1087.
18. Boyd NF, Guo H, Martin LJ, Sun L, Stone J, Fishell E, Jong RA, Hislop G, Chiarelli A, Minkin S, Yaffe MJ. Mammographic density and the risk and detection of breast cancer. N Engl J Med 2007; 356:227–336.
19. Harvey JA, Bovbjerg VE: Quantitative assessment of mammographic breast density: relationship with breast cancer risk. Radiology 2004; 230:29–41.
20. Kerlikowske K: The mammogram that cried Wolfe. N Engl J Med 2007; 356:297–300.

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Original Article ***Open Access***

Knowledge Regarding Dengue Fever among Adult Rural Population in A Selected Area of Jashore District of Bangladesh

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Abstract

Background: Dengue is one of the most important emerging viral diseases of major public health concern in Bangladesh. It is the most common vector-borne disease in the world and increasing in prevalence in many geographic regions. **Objective:** The present study was undertaken to determine the socio-demographic characteristics and to assess their knowledge of dengue fever among rural populations in selected villages of Chowgacha Upazila, Jashore District. **Methodology:** This cross-sectional study was conducted among 388 participants of rural populations in selected villages of Chowgacha Upazila, Jashore District to assess their knowledge of dengue fever. Their socio-demographic and knowledge-related data were collected by using pre pre-tested semi-structured questionnaire. **Results:** In this study, it was found that among 388 respondents Maximum (67.25%) respondents were female and the rest were male. The minimum age was 18 and the maximum was 87, the majority of the respondents (29%) were in the age group of 18-27 years. Maximum respondents (67%) were female. The majority (34%) of them just completed secondary education and were housewives (58%) and among males, 16% were farmers/day laborers. Maximum (97%) said that they heard about dengue. A maximum (39%) of respondents mentioned the source of information was from the radio or TV. Regarding their knowledge of transmission of dengue fever majority of the respondents (54%) said that the occurrence was by bite of an Aedes mosquito Majority (62%) of them said that the occurrence of the disease is more in the rainy season. More than half of the respondents (63 %) mentioned that the breeding place of Aedes mosquitoes is stored water around the house. Maximum (49%) respondents mentioned that the symptoms were fever, headache, and retro-orbital pain. According to knowledge regarding treatment, (42%) of them mentioned it is treated as normal fever treatment with excessive Fluid Intake. A maximum (52%) of them were unknown with the complications of dengue. Most of the Respondents (54 %) mentioned that Dengue can be prevented by the prevention of accumulation of water in the surrounding area. **Conclusion:** There is a different level of knowledge regarding dengue fever among respondents in the study area. *[Journal of Army Medical College Jashore, July, 2023;4(2):57-61]*

Keywords: Knowledge; Dengue fever; rural population

Introduction

Dengue fever is the most rapidly spreading mosquito-borne viral disease. Dengue disease as a global health concern emerged following World War II and rapidly spread across the tropics and subtropics in the wake of rapid population growth, urbanization, inadequate basic housing, climate change, increasing air travel, and expanding international trade[1-3]. The disease is endemic in these regions via the main vector Aedes (Aedes aegypti and Aedes albopictus) mosquitoes, which prefer to breed in water-filled containers in domestic and peri-domestic environments[4,5]. Widespread to at least 124 countries worldwide, more than 50 million cases of dengue fever (DF) are reported every year; it is estimated that approximately 2.5 billion people are at risk of

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dengue infection[6,7]. In Bangladesh, a tropical country in South Asia, periodic outbreaks of dengue have been recorded since 1964, with the first epidemic in 2000 resulting in 5,553 hospitalizations and 93 deaths[8]. The risk of infection remains high among the urban population, and the potential for future outbreaks has become a subject of serious concern among members of the public health community[9]. The four distinct but closely related viruses that cause dengue (DENV1–4) are transmitted to people through the bites of female Aedesaegypti mosquitoes, which acquire the viruses by feeding on the blood of an infected person.

Recovery from infection by one provides lifelong immunity against that serotype but confers only partial and transient protection against subsequent infection by the other three The four distinct but closely related viruses that cause dengue (DENV1–4) are transmitted to people through the bites of female Aedesaegypti mosquitoes, which acquire the viruses by feeding on the blood of an infected person. Recovery from infection by one provides lifelong immunity against that serotype but confers only partial and transient protection against subsequent infection by the other three The four distinct but closely related viruses that cause dengue (DENV1–4) are transmitted to people through the bites of female Aedes aegypti mosquitoes, which acquire the viruses by feeding on the blood of an infected person. Recovery from infection by one provides lifelong immunity against that serotype but confers only partial and transient protection against subsequent infection by the other three[10]. Dengue fever is a severe, flu-like illness that affects infants, young children, and adults, but seldom causes death. Dengue should be suspected when a high fever (40°C/ 104°F) is accompanied by two of the following symptoms: severe headache, pain behind the eyes, muscle and joint pains, nausea, vomiting, swollen glands, or rash. Symptoms usually last for 2–7 days, after an incubation period of 4–10 days after the bite from an infected mosquito. Severe dengue is a potentially deadly complication due to plasma leaking, fluid accumulation, respiratory distress, severe bleeding, or organ impairment. Warning signs occur 3–7 days after the first symptoms in conjunction with a decrease in temperature (below 38°C/ 100°F) There are severe abdominal pain, persistent vomiting, rapid breathing, bleeding gums, fatigue, restlessness, and blood in vomit. The next 24–48 hours of the critical stage can be lethal; proper medical care is needed to avoid complications and risk of death. So far, there is no effective vaccine or antiviral drug against the disease; early appropriate treatment and vector control are the only ways to reduce mortality and global burden. The present study was undertaken to determine the socio-demographic characteristics and to assess their knowledge of dengue fever among rural populations in selected villages of Chowgacha Upazila, Jashore District.

Methodology

Study Settings and Population: This descriptive type of cross-sectional study was conducted with the major objective of assessing the knowledge regarding Dengue among the adult populations in a selected area of Chowgacha Upazila, Jashore District from 8th November 2019 to 12th November 2019. All available rural respondents who were willing to participate and aged between 18 to 87 years who lived in villages of Chowgacha upazila, Jashore District were purposively selected. According to the study objectives the study was designed with a description of knowledge-related factors. The total study population was 400 and data was collected by face-to-face interview with the respondents using semi-structured questionnaires.

Statistical Analysis: Statistical analysis was performed by Windows-based software named Statistical Package for Social Science (SPSS), version 22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Continuous data were expressed as mean, standard deviation, minimum, and maximum. Categorical data were summarized in terms of frequency counts and percentages.

Ethical Clearance: Submitted the research protocol to the Institutional Review Board (IRB) of the local institute to review the scientific and ethical issues related to the research to obtain the required approval. The study objectives were explained to each participant and written informed consent was taken from the patient who willingly participated in the study. Strictly maintained treatment and investigation papers confidentiality. The information on the treatment and investigation papers was only used for this research purpose. Thus, the researcher maintained the anonymity of the individual patients.

Results

Out of the total 400 respondents 97.0% cases of them who have heard about dengue fever before and took part in the study. Adult rural populations both male and female aged between 18-87 years were included and the response rate was 100.0% cases. After completion of data collection, all the data were compiled, tabulated, and analyzed according to the objective of the study. The results of the study are discussed in the following sections.

The minimum age of the respondents was 18 and the maximum age was 87. The majority of the respondents 29% were in the age group of 18-27 years. Maximum (67%) respondents were female. Maximum respondents (34%) completed Secondary education & only (7%) respondents were Graduates. Among the participants 17% were illiterate and only 19 % completed primary level in terms of educational status. out of 388 respondents' a maximum (58.0%) were housewives & 4% of respondents were unemployed and 6% were in other categories like singer, dancer, actress, and so on.

Maximum respondents (97.0%) have Heard about dengue and minimum respondents (1.0%) were not sure about Dengue (Figure I).

Table 1: Distribution of Respondents by Socio-Demographic Characteristics (n=388)

Socio-demographic Variable	Frequency	Percent
Age Group		
18 to 27 Years	113	29.0
28 to 37 Years	88	23.0
38 to 47 Years	74	19.0
48 to 57 Years	65	17.0
58 to 67 Years	35	9.0
68 to 77 Years	9	2.0
78 to 87 Years	4	1.0
Gender		
Male	128	33.0
Female	260	67.0
Educational status		
Illiterate	66	1.0
Nonformal education	36	9.0
Primary Education	76	19.0
Secondary Education	130	34.0
Higher Secondary	53	14.0
Graduate	27	7.0
Occupation		
Day labor/Farmer	61	16.0
Service	25	7.0
Business	34	9.0
Housewife	232	58.0
Unemployed	14	4.0
Others	22	6.0

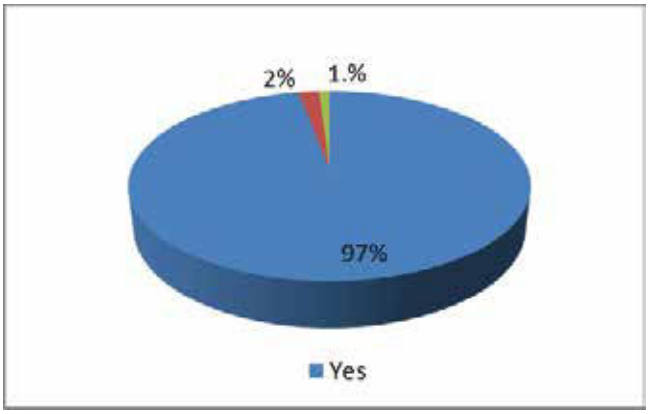

Figure I: Distribution of respondents by they heard about Dengue Fever (n=388)

Out of 400 about 39% of respondents have mentioned the source of information from the radio or TV and a minimum of 1% have the information from another source like friends, or coworkers (Table 2).

The majority (54%) of the respondents said that Dengue fever is caused by the bite of an Aedes Mosquito. Regarding seasonal variation most of the respondents (62%) said that

Table 2: Distribution of the respondents according to sources of information (n=388)

Source of Infection	Frequency	Percent
Doctor	14	4.0
Nurse	12	3.0
Health Worker	23	6.0
NGO	6	1.0
Neighbor	135	35.0
Relative	23	6.0
Radio/TV	155	39.0
Newspaper	15	4.0
Billboard	2	0.5
Others	3	1.0
Total	**388**	**100.0**

Table 3: Distribution of respondents according to their knowledge regarding Dengue Fever (n-388)

Knowledge Variables	Frequency	Percent
Transmission of Dengue fever		
• By bite of Aedes Mosquito	209	54.0
• Unknown	116	30.0
• Others	63	16.0
Seasonal variation of dengue fever		
• Rainy season	240	62.0
• Summer	94	24.0
• Unknown	40	10.0
• Others	14	4.0
Breeding place of Aedes mosquito		
• Stored Water Around the house	244	63.0
• Stored water in flower tub, drum	104	27.0
• Stored water in AC/Freeze	10	2.0
• Unknown	18	5.0
• Others	12	3.0
Symptoms of Dengue Fever		
• Fever, Headache, Retro-orbital pain	190	49.0
• Body Ache & Joint Pain	90	23.0
• Itch & Rash	15	4.0
• Hemorrhage	20	5.0
• Unknown	65	17.0
• Others	8	2.0
Diagnosis of Dengue Fever		
• By blood test	128	33.0
• Unknown	220	57.0
• Others	40	10.0
Treatment of Dengue		
• Normal fever treatment with Excessive Fluid Intake	113	42.0
• I/V Of Saline or Blood	30	8.0
• Antibiotics	24	6.0
• Unknown	138	36.0
• Others	31	8.0
Complications of Dengue fever		
• Hemorrhage, shock	119	31.0
• Unknown	201	52.0
• Others	68	17.0
Preventive measures of Dengue		
• Prevent surrounding water accumulation	209	54.0
• Protect from mosquito bites and chemical spraying	109	28.0
• Unknown	25	6.0
• Others	45	12.0

the occurrence is more in rainy season 24% said summer and 10% of them mentioned unknown and very few (4%) of them said others like spring season or in any season. Maximum respondents (63 %) know that the breeding place of mosquitoes is in stored water around the house. Only 5% of respondents said unknown to them and 3% said others like anywhere can be the breeding place. Most of the respondents (49%) said that the symptoms were Fever, Headache, and Retro-orbital pain, and (2%) told about others like nausea, vomiting, and diarrhea. Regarding diagnosis of dengue majority (57%) of them said unknown. Among them (42%) of respondents mentioned the treatment is normal fever treatment with Excessive Fluid Intake and 36% said it is Unknown. Maximum Respondents (54%) know that Dengue can be prevented by prevention of accumulation of water in the surrounding area and 6% of them mentioned unknown (Table 3).

Discussion

A total of 388 individuals in the village of Chowgachha Upazila of Jashore district were interviewed. Both adult males and females participated in the study with a 100% response rate. The current study found that a total of 67.25% of respondents were females and the rest were male. Among the respondents, 29.0% were in the age group of 18 to 27 years. The majority of the respondents 96.5% were Muslims. Among them, 34% of the respondents had completed a secondary level of education and 17% were illiterate. Only 7% were graduates. Nearly 58.0% of the female respondents were housewives, and among males, 16% were day laborers or farmers and 7.0% were service holders. Among the respondents, 31.0% mentioned their monthly family income of 5000 to 10000 Taka. The majority 97.0% of the respondents in this study had previously heard about dengue fever and 2.0% said they didn't hear and (1.0%) were not sure about Dengue. Out of 388, about 39.0% of respondents have the source of information from the radio or TV. Maximum respondents (50%) know that Dengue is transmitted by Insects. The majority (54%) of the respondents said that the occurrence was by the bite of an Aedes Mosquito. Most of the respondents (50%) mentioned that mosquitoes were unrecognized. Half of the respondents 52.0% said that it was not infectious. Most of the respondents (62.0%) said that the occurrence is more in the rainy season. Maximum respondents (49.0%) said that the symptoms were Fever, Headache, and Retro-orbital pain, and 33% were diagnosed with Dengue Fever by a blood test. Among them (61.0%) said that Dengue occurred only in urban areas 52.0% of the respondents said that the complications were unknown to them. Among all 42% mentioned normal fever treatment with Excessive Fluid Intake (36%) Respondents said knowledge of treatment is unknown, maximum number of respondents (57.0%) were Unaware of risky treatment. Most of the Respondents (53.0%) have e knowledge about the recurrence of the disease. A maximum of them (63.0%) know that the breeding place of Dengue is stored water around the house and (54.0%) know that Dengue can be prevented by the prevention of accumulation of water in the surrounding area. A previous study in India found that more than half (52.6%) of the study participants knew the mode of transmission of dengue, studies done around India showed a higher proportion of usage of personal prophylactic measures for mosquito control. Hence, the motivation of the rural population needs to be done at frequent intervals to bring about behavioral change. Studies done around India also reported that advice from healthcare professionals is important, especially among the rural population, to develop adequate knowledge and positive attitude toward dengue prevention[11] However, studies done in Chandigarh (89%) and Kanchipuram (72.6%) reported that a higher proportion of participants knew mosquito as a mode of transmission and health professionals were the major source of information[12,13]. Studies done in Malaysia also reported similar findings (77.5%)[14]. However, contrast findings were found in a study done in Pune where only 40.4% were aware of the mode of transmission[15].

Good knowledge about the transmission of dengue is important to carry out preventive measures at the individual, household, and community levels. Studies done in Asian countries such as Pakistan and Malaysia also showed similar findings[16,17]. Another study was conducted in the urban field practice area of the Department of Community Medicine, Jawaharlal Nehru Medical College, KAHER, Belagavi found that the majority of them (87.75%) identified fever as a cardinal symptom of dengue fever. Only 32.25% knew that dengue fever is transmitted by Aedes mosquitoes. 42% of participants had good knowledge of dengue. The main source of information on dengue was from the television[18]. A cross-sectional study was done among three hundred and forty-three randomly selected residents of urban and peri-urban regions of Dhaka city. The study found that among the respondents 63.3% were female, 48% were married and 37.7% were of the age group of 21-30 (mean=31.34, SD=11.758). The majority of the respondents had secondary/higher secondary (50.9%) and students represented 34.1% of the total respondents. It was found most of them had no history of having been affected by dengue fever (97.7%) and 53.2% did not travel to the subtropical or tropical region. Television (61.2%) and radio (50.4) were a most common source of information on dengue fever.

The majority of the respondents had a low level of knowledge of dengue (89.1%). It was found that 81.0% knew that mosquitoes generally lay their eggs on dirty water, 79.6% knew mosquitoes spread dengue from one person to another and 70.6% were aware that dengue can fever is flu-like illness that affects infants, young, children, and adults. The study revealed 50.1% had a neutral attitude towards dengue fever, and there was a significant association

between age and practice (p=0.031); knowledge and practice (p<0.000)[19].

Conclusions

The present study concludes that the adult rural population in villages of Chawgachha upazila in Jashore District have good knowledge regarding transmission, seasonal variation of the disease, breeding place of mosquitoes, symptoms, treatment, and prevention of Dengue fever. Public awareness is necessary to address the knowledge gap revealed by this study. Hence it is necessary to organize the public education program to prevent the outbreak of dengue by increasing the level of Knowledge so that they can attain a positive attitude and adopt desired behavioural changes. This sample may not represent the rural population of Bangladesh. A large-scale community-based study is needed to know the real situation of the country It is important to provide health education to the rural population regarding Dengue fever. We also recommend strengthening the public health education campaigns to promote preventive measures against this vector-borne disease.

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No conflict of interest.
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Authors' Contributions
Tamanna N, Naser MA, Rahman MS conceived and designed the study, analyzed the data, and interpreted the results.
Alam GN, Mou SA wrote up the draft manuscript. Tamanna N, Naser MA involved in the manuscript review and editing. All authors read and approved the final manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

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References

1. Gubler DJ. Epidemic dengue/dengue hemorrhagic fever is a public health, social, and economic problem in the 21st century. Trends in Microbiology 2002; 10(2):100-103
2. Guzman MG, Kouri G. Dengue: An update. Lancet Infectious Diseases, 2002; 2(1): 33- 42
3. Beatty ME, Stone A, Fitzsimons DW. Best practices in dengue surveillance: A report from the Asia-Pacific and Americas Dengue Prevention Boards. PLOS Neglected Tropical Diseases, 2010; 4: e890
4. Scott TW, Morrison AC. Vector dynamics and transmission of dengue virus: Implications for dengue surveillance and prevention strategies: Vector dynamics and dengue prevention. Current Topics in Microbiology and Immunology 2010;338:115-128
5. Guzman MG, Halstead SB, Artsob H, Buchy P. Farrar J, Gubler DJ, Hunsperger E, Kroeger A, Margolis HS, Martinez E, Nathan MB, Pelegrino JL, Simmons C, Yoksan S. Peeling RW. Dengue: A continuing global threat. Nature Reviews - Microbiology, December 2010: S7- S16
6. TDR/WHO. Dengue: Guidelines for Diagnosis, Treatment, Prevention and Control. Geneva, Switzerland: TDR/WHO, 2009
7. Russel PK, Buescher EL, McCown JM, Ordonez J. Recovery of dengue viruses from patients during epidemics in Puerto Rico and East Pakistan. American Journal of Tropical Medicine and Hygiene 1966;15:573-539
8. Karim MN, Munshi SU, Anwar N, Alam MS. Climatic factors influencing dengue cases in Dhaka city: A model for dengue prediction. Indian Journal of Medical Research 2012;136:32-39
9. Banu S, Hu W, Hurst C, Guo Y, Islam MZ, Tong S. Space-time clusters of dengue fever in Bangladesh. Tropical Medicine & International Health, 2012;17(9):1086-1091
10. Guha D, Schimmer B. Dengue fever: new paradigms for a changing epidemiology. Emerging themes in epidemiology 2005;2;1
11. Krishnamoorthy Y, Chandar D, Jayaseelan V, et al, Household survey on public awareness and attitudes toward dengue infection in rural Tamil Nadu, South India, J Educ Health Promot. 2018;7:171
12. Chellaiyan VG, Manoharan A, Ramachandran M. Knowledge and awareness towards dengue infection and its prevention: A cross-sectional study from a rural area of Tamil Nadu, India. Int J Community Med Public Health. 2017;4:494–9
13. Malhotra G, Yadav A, Dudeja P. Knowledge, awareness and practices regarding dengue among rural and slum communities in North Indian city, India. Int J Med Sci Public Health. 2014;3:295–9
14. Leong TK. Knowledge, attitude, and practice on dengue among rural communities in Rembau and Bukit Pelanduk, Negeri Sembilan, Malaysia. Int J Trop Med Health. 2014;4:841–8
15. Singru S, Debnath D, Bhosale SB, Pandve H, Fernandez K. Study of knowledge, attitude, and practices regarding dengue in the urban and rural field practice area of a tertiary care teaching hospital in Pune, India. Med J DY Patil Vidyapeeth. 2013;6:374
16. Itrat A, Khan A, Javaid S, Kamal M, Khan H, Javed S, et al. Knowledge, awareness, and practices regarding dengue fever among the adult population of dengue hit cosmopolitan. PLoS One. 2008;3:e2620
17. Chandran JR, Wong LP, Abubakar S. Practices of dengue fever prevention and the associated factors among the Orang Asli in Peninsular Malaysia. PLoS Negl Trop Dis. 2015;9:e0003954
18. Basole NT, Baliga SS, Angolkar M. Knowledge regarding dengue disease among people in an urban area: a cross-sectional study, International Journal of Community Medicine and Public Health Basole NT et al. Int J Community Med Public Health. 2018 Oct;5(10):4498-4502
19. Rana MS, Shakil MSA. Knowledge, Attitude, and Practice on Dengue Fever Transmission Among Urban and Periurban Residents of Dhaka City, Bangladesh. TMJ 2020;3(2):110-120

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Original Article ***Open Access***

Prevalence of Abnormal Uterine Bleeding according to the PALM COEIN Classification System in the Reproductive Age Group in a Tertiary Center

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Abstract

Background: AUB (abnormal uterine bleeding) is defined as any variation from the normal menstrual cycle including alteration in its frequency, regularity of menses, duration of flow, and amount of blood loss. It can occur any time between menarche to menopause. A good clinician tries to identify the causative factors responsible for the disease, reverse the abnormality, and induce or restore the cyclic predictable menses. **Objectives:** The objective of the study is to find out the prevalence in patients presented with abnormal uterine bleeding (AUB) according to the PALM-COEIN FIGO classification system. **Methods:** A cross-sectional study was conducted on 100 patients (from menarche to menopause) who presented with abnormal uterine bleeding in the Department of Obstetrics and Gynecology of BIRDEM General Hospital over one year. Ethical clearance was taken from the ethical review board of BIRDEM. The cases were diagnosed and categorized by taking history, performing physical examination, and necessary investigation. **Results:** Most of the patients who presented with AUB were in the age group 40-50 years (58%). The multiparous patients are more affected and the most common presenting complaint was heavy menstrual bleeding (80%). In addition, 14 % of women were obese and 51% were overweight. Maximum patients belong to the adenomyosis category (44%) followed by leiomyoma belongs to 42%, polyp belongs to 7%, ovulatory dysfunction belongs to 6% and malignancy which is 1%. **Conclusions:** Classic terminology for AUB is insufficient and confusing with respect to etiological pathologies among non-pregnant women of reproductive ages. Wide-spread adoption of the PALM COEIN system for AUB classification will facilitate more meaningful communication among both clinicians and investigators and clarify the populations that should be evaluated in clinical trials, thereby enhancing communication with patients. *[Journal of Army Medical College Jashore, July, 2023;4(2):62-65]*

Keywords: AUB; abnormal uterine bleeding; PALM COEIN

Introduction

Abnormal uterine bleeding (AUB) is a common gynecological problem for medical visits among women of reproductive age group[1-3]. It is defined as any bleeding that deviates from normal menstruation. It may differ in terms of frequency of bleeding, durations, and the pattern of bleeding during the menstrual cycle or menopause[1]. Up to one-third of women will experience abnormal uterine bleeding in their life, with irregularities most commonly occurring at menarche and perimenopause. A normal menstrual cycle has a frequency of 24 to 38 days and lasts 2 to 7 days, with 5 to 80 milliliters of blood loss. Variations in any of these 4 parameters constitute abnormal uterine bleeding[4].

Abnormal uterine bleeding can also be divided into acute and chronic. Acute AUB is excessive bleeding that requires immediate intervention to prevent further blood loss. Acute AUB can occur on its own or superimposed on chronic AUB, which refers to irregularities in menstrual bleeding for most of the previous 6 months[5].

It is one of the common causes of anemia in women,

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especially in the developing world[6,7]. Moreover, it affects women's health in medically, mentally, and socially[8]. Abnormal bleeding may occur in different conditions. It may occur in pregnancy, secondary to hemostatic disorders, pathology of the genital tract, infections, systematic diseases, endocrine disturbance, obesity, stress, and extreme exercise account can all disrupt normal ovulatory function and may be considered as preventable risk factors for AUB[1-3,6-10].

The International Federation of Gynecology and Obstetrics (FIGO) in 2011 approved a new classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age[13]. The acronym PALM-COEIN is now being widely used for categorizing the causes of AUB. The first portion, PALM, describes structural issues. The second portion, COEI, describes non-structural issues. The N stands for "not otherwise classified."

In the general population, the AUB is different from different studies. The prevalence of AUB was reported from 5% to 30% among reproductive-age women. In the Bangladeshi population, studies done on AUB have been very limited. Therefore, this study aimed to assess the AUB and its related factors among reproductive-age women[11,12] This study helps to identify the magnitude and risk factors of abnormal menstrual bleeding in the study setting. This is important for health planners and policymakers to implement appropriate strategies for early screening, diagnosis, and treatment of AUB to decrease maternal morbidity and mortality.

Methodology

Study Population and Setting: This was a cross-sectional study in the Department of Obstetrics & Gynaecology at BIRDEM Hospital, Dhaka for a period of 1 year from July 2017 to June 2018. The study population was women between menarche to menopause who were primarily diagnosed with abnormal Uterine Bleeding and admitted to the Obstetrics and Gynaecology department of BIRDEM General Hospital. Ethical clearance is permitted by the ethical committee of BIRDEM. Inclusion criteria were women between menarche to menopause, history of irregular menstruation with excessive bleeding for prolonged duration, increased frequency of menstruation and intermenstrual bleeding or Patients admitted for abnormal uterine bleeding. Exclusion criteria was pregnant women with bleeding.

Study Procedure: Data collection was done with a pretested questionnaire. Data collection was done after a thorough evaluation of the cases by history taking from the patient, physical examination & investigations, necessary information was collected in a preformed data collection sheet. Diagnosis of AUB was based on detailed previous and present menstrual history including duration, frequency, flow and dysmenorrhoea, contraceptive history, family history of polycystic ovary syndrome (POCS), bleeding disorder, medical history, physical examination including general and pelvic examination findings. Convenient type of non-randomized sampling was used.

Statistical Analysis of Data: All the relevant collected data was compiled on a master chart first and Statistical analyses were done by computer software devised as the statistical package for social science (SPSS Windows version 22). The value was expressed as frequencies and percentages; the results were presented in tables.

Results

Out of one hundred cases of abnormal uterine bleeding in reproductive-aged women, the commonest age group was between 40 to 50 years (58%) (Figure I).

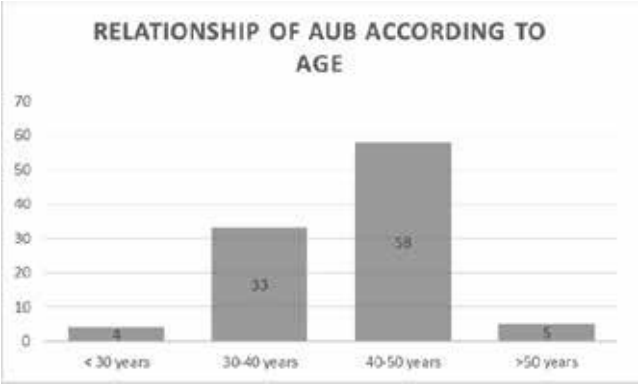

Figure I: Relationship of AUB according to age

Here, Figure I shows the age distribution of the study patients, ages ranging from 22 to 53 years. It was observed

Table 1: Distribution of study population according to parity (n=100)

Parity	No.	Percent
1-2	19	19.0
3-4	44	44.0
5+	28	28.0
Nullipara	9	9.0
Total	**100**	**100.0**

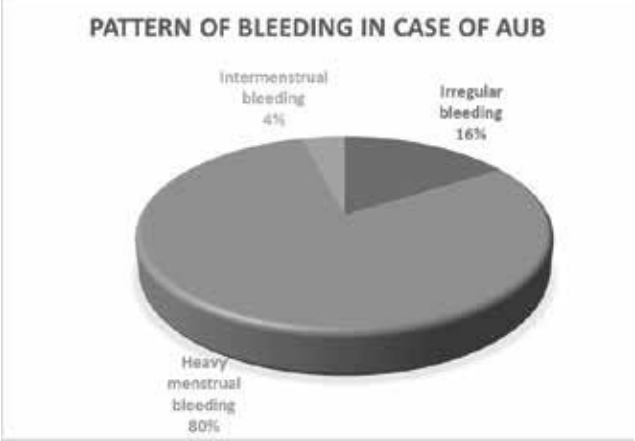

Figure II: Pattern of bleeding in the case of AUB

that the majority of 58 patients (58.0%) belonged to age 40-50 years, followed by 33 patients (33.0%) who belonged to age 30-40 years. The mean age was 42.72 ± 6.2 years.
Table 1 shows the maximum number of multiparous patients. Here, Figure II shows the maximum no of patients suffering from heavy menstrual bleeding.

Table 2: distribution of study population according to BMI (n=100)

Body Mass Index	Frequency	Percent
Extremely Obese	4	4.0
Normal	30	30.0
Obese	14	14.0
Overweight	51	51.0
Underweight	1	1.0
Total	**100**	**100.0**

Table 2 shows the maximum no of patients belonging to an overweight group (51%) followed by normal weight (30%), obese (14%), extremely obese (4%), and underweight (1%).

Table 3: Distribution of study population according to chronicity (n=100)

Acute/Chronic	No.	Percent
Acute	37	37.0
Chronic	63	63.0
Total	**100**	**100.0**

Table 3 shows the maximum no of patients according to the chronic group (63%) followed by acute (37%).

Table 4: Distribution of study population according to histopathological findings (n=100)

Histopathological types	No.	Percent
AUB A	44	44.0
AUB L	42	42.0
AUB M	1	1.0
AUB O	6	6.0
AUB P	7	7.0
Total	**100**	**100.0**

Table 4 shows the maximum no. of patients belonging to adenomyosis (44) following leiomyoma (42) following polyp (7) following ovarian (6) following malignancy (1)

Table 5: Single/Multifactorial etiology of AUB

Single/Multiple	Frequency	Percent
Single pathology	37	37.0
Multiple pathologies	63	63.0
Total	**100**	**100.0**

Table 5 shows the maximum no of patients according to Multiple pathologies (63%) followed by single pathology (37%).

Discussion

Excessive blood loss interferes with a woman's physical, social, and/or marital quality of life[14]. Abnormal uterine bleeding can occur in pre-, peri, and post-menopausal women. Most commonly AUB occurs at the beginning and end of the reproductive life.
The present study primarily focused on categorizing the patients of AUB according to the PALM- COEIN classification similar to the studies done by Madhra et al.; [14], Bahamondes and Ali[15] Gouri et al.[16], and Goel et al.[17] Mishra et al[18]. so that planning, investigations, and treatment can be easier and done properly. Most of the patients who presented with AUB were in the age group 40-50 years (58%) similar to the study of Goel et al.[17] where the percentage was 42.33%.
The multiparous patients are more affected. The most common presenting complaint was heavy menstrual bleeding (80%) whereas in Goel et al. it was (62%). In the present study maximum patients belongs to the adenomyosis category (44%) followed by leiomyoma belongs to 42%. According to the study done by Qureshi and Yusuf[19] in 2013, the maximum patients of with AUB were classified under the leiomyoma category, the number being 25% followed by ovulatory dysfunction (24%). Whereas, in a study done by Gouri et al.,[17] in May 2016, the maximum number of patients were categorized under ovulatory dysfunction (27%) followed by leiomyoma (24.67%).
The majority of patients were belonging to chronic group (63%) suffering from more than 6 months and acute group (37%) suffering from less than 6 months. In addition, 14% of women were obese and 51% were overweight. Obesity by increasing the overall lifetime exposure to estrogen by peripheral aromatization of adrenal androgens increases the incidence of polyps, leiomyomas, and endometrial carcinoma (relative risk 3-10%). The risk of leiomyomas is seen to be increasing by 21 % for each 10-kg increase in body weight[20,21]. Obesity has proved to be a main predisposing factor for AUB[22].

Conclusion

The new PALM-COEIN classification system for AUB approved by a multinational group of clinicians and investigators is expected to facilitate proper and easier diagnosis of etiology and treatment of women with acute and chronic AUB. Identifying the exact cause is essential to successfully treat patients with AUB. The PALM COEIN classification helps to practically ascertain the cause of AUB, and thereby effectively adopt and plan for focused treatment of patients.

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Conflict of interest
None declared.
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Authors' Contributions
Priyanka Podder contributed to the analysis of the data, interpretation of the results, and critical review of the manuscript. Ferdousi Begum was involved in the manuscript review and editing. Jesmin Ara and Joysree Saha helped in making the draft manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

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References
1. Ding C, Wang J, Cao Y, et al. Heavy menstrual bleeding among women aged 18-50 years living in Beijing, China: prevalence, risk factors, and impact on daily life. BMC Womens Health 2019; 19: 27.
2. Khafaga A, Goldstein SR. Abnormal uterine bleeding. Obstet Gynecol Clin North Am 2019; 46(4): 595–605.
3. Kazemijaliseh H, Ramezani Tehrani F, Behboudi-Gandevani S, et al. A population-based study of the prevalence of abnormal uterine bleeding and its related factors among Iranian reproductive-age women: an updated data. Arch Iran Med 2017; 20(9): 558–563.
4. Munro MG, Critchley HOD, Fraser IS., FIGO Menstrual Disorders Committee. The two FIGO systems for normal and abnormal uterine bleeding symptoms and classification of causes of abnormal uterine bleeding in the reproductive years: 2018 revisions. Int J Gynaecol Obstet. 2018 Dec;143(3):393-408
5. ACOG committee opinion no. 557: Management of acute abnormal uterine bleeding in nonpregnant reproductive-aged women. Obstet Gynecol. 2013;121(4):891-896
6. Senthilvel S, Vasudevan S, Anju PS, et al. Assessment of symptoms and quality of life among postmenopausal women in a tertiary care hospital in Kochi, South India: a hospital-based descriptive study. J Midlife Health 2018; 9(4): 185–190.
7. Munro MG, Lukes AS. Abnormal uterine bleeding and underlying hemostatic disorders: report of a consensus process. FertilSteril 2018; 84(5): 1335–1337.
8. Gray SH, Emans SJ, Gray DH. Abnormal vaginal bleeding in adolescents. Pediatr Rev 2020; 28(5): 175–182.
9. Chodankar R, Critchley HOD, Simón C. Biomarkers in abnormal uterine bleeding. Biol Reprod 2019; 101(6): 1155–1166.
10. Mahapatra M, Mishra P. Clinicopathological evaluation of abnormal uterine bleeding. J Health Res Rev 2017; 2(2): 45–491.
11. Liu Z, Doan QV, Blumenthal P, Dubois RW. A systematic review evaluating health-related quality of life, work impairment, and health-care costs and utilization in abnormal uterine bleeding. Value Health. 2007;10(3):183-94.
12. Gerema U, Kene K, Abera D, et al. Abnormal uterine bleeding and associated factors among reproductive age women in Jimma town, Oromia Region, Southwest Ethiopia. Women's Health. 2022;18.
13. Munro MG, Critchley HO, Broder MS, Fraser IS; FIGO Working Group on Menstrual Disorders. FIGO classification system (PALMCOEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. Int J GynaecolObstet 2011; 113(1):3-13.
14. Madhra M, Fraser IS, Munro MG, Critchley HO; Abnormal uterine bleeding: Advantages of formal classification to patients, clinicians and researchers. Acta Obstet Gynecol Scand 2014; 93:619-25
15. Bahamondes L, Ali M; Recent advances in managing and understanding menstrual disorders. F1000 Prime Rep 2015; 7:33
16. Gouri SRS, Lakshmi PV, Rani NG, Kumar NA. Categorization of the Causes of AUB According to PALM-COEIN Classification 107 International Journal of Scientific Study, 2016; 4(2).
17. Goel P, Rathore BS. PALM-COEIN FIGO Classification for diagnosis of Abnormal Uterine Bleeding: Practical Utility of same at Tertiary Care Centre in North India. Scholars Journal of Applied Medical Sciences 2016; 4(8A).
18. Mishra D, Sultan S, FIGO's PALM–COEIN Classification of Abnormal Uterine Bleeding: A Clinico-histopathological Correlation in Indian Setting. The Journal of Obstetrics and Gynecology of India 2017:67(2):1129.
19. Qureshi FU, Yususf AW. Distribution of causes of abnormal uterine bleeding using the new FIGO classification system. J Pak Med Assoc 2013: 63:974
using the new FIGO classification system. J Pak Med Assoc 2013: 63:974
20. Malhotra N, Kumar P. Abnormal and excessive uterine bleeding Jeffcoate's principles of gynecology, Jaypee, 8th edition; 2014. p. 560–75.
21. Malhotra N, Kumar P. Tumors of corpus uteri, Jeffcoate's Principles Of Gynecology, Jaypee, 8th edition; 2014. p. 450–8.
22. Nouri M, Tarakkolian A. Association of dysfunctional uterine bleeding with high body mass index and obesity as a main predisposing factor. Diabetes MetabSyndr. 2014;8(1):1–2

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Original Article ***Open Access***

Prediction Model of Age among Patients presented with Histopathological Confirmed Ductal Carcinoma of Breast: Experience of 164 Cases in Bangladesh

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Abstract

Background: Breast carcinoma is very common among women which may be presented with different variation. **Objective:** The purpose of the present study was to see prediction of age among the patients presented with histopathological confirmed ductal carcinoma of breast. **Methodology:** This retrospective study was conducted in the different private diagnostic laboratory and other Hospitals of Dhaka city of Bangladesh from January 2015 to December 2018 for a period of four years. The patients who were histopathological diagnosed case of duct cell carcinoma of breast were included as study population. The mastectomy specimen or lumpectomy specimen were collected from female patients and these were diagnosed as duct cell carcinoma by FNAC. Detail clinical information with special emphasis on age, duration & size of tumor, axillary LN status and other relevant investigation reports were recorded in a questionnaire. Tumor tissue as well as resected LN were examined macroscopically and microscopically on hematoxylin and eosin slides at 40X lens. **Results:** A total number of 164 patients were recruited for this study. Most of the patients were in the age group of 40 to 50 years and 30 to 40 years which were 54(32.9%) cases. The mean with standard deviation of the study population was 43.34±10.454 years with the range of 22 to 67 years. Most of the women had given the negative response about the contraceptive use which was 110(67.1%) cases. Majority of the study population had told that they had given the breast feeding during lactating period which was 132(80.5%) cases. The grade I, grade II and grade III were detected in 25(15.8%) cases, 111(70.3%) cases and 22(13.9%) cases respectively. Prediction model was created based on tumor size with different variables of the study population. The women who had given the history of breast feeding had larger size of tumor than non-feeding women. In case of age group considering from 30 to 45 years based on 5 years' difference, the tumor size was increasing serially. Among contraceptive users the size of tumor was found larger than non-users which was significantly different ($p<0.05$). Prediction model of parity showed the significant difference among the different parity which was increased based on the increase number of parity ($p<0.05$). **Conclusion:** In conclusion prediction model shows significant difference in the size of the tumor with the age group, history of breast feeding and contraceptive use. *[Journal of Army Medical College Jashore, July, 2023;4(2):66-71]*

Keywords: Prediction; age group; histopathological examination; ductal carcinoma of breast

Introduction

Breast carcinoma has become the most common malignancy in the female, affecting one in eight women and is one of the leading causes of mortality among women in Western countries[1,2]. Breast cancer survival rates vary greatly world wide ranging from below 40.0% in low income countries, 60.0% in meddle income countries and 80 % or over in North America, Sweden & Japan. The low survival rates in less developed countries can be explained mainly by the lack of early detection programmes, resulting in a high proportion of women presenting with late –stage diseases,

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as well as by the lack of adequate diagnosis and overall management facilities[3].

Breast carcinoma is also the common malignancy among the women of Bangladesh[4]. A study of Dhaka medical college hospital estimated that the incidence of breast carcinoma is about 17.0% cases. The annual report of National Institute of Cancer Research & Hospital(NIRCH) of Bangladesh showed that frequency of breast carcinoma is 12.7% in all cases of malignancy & 39.7% in malignancy affecting female[4].

The most important prognostic factors are the tumor size, histological grade and lymph node stage. Biomarker expression in breast cancer is also used as a prognostic indicator & predictor of response to hormonal & chemotherapy. In terms of tumor biology, proliferation has been recognized as a distinct hallmark of cancer and act as an important determinant of cancer outcome[6]. Increased tumor cell proliferation is accompanied by cell matrix remodeling and neo-angiogenesis, which together form the basis for an aggressive tumor phenotype[7].

Since tumors that exhibit increased proliferation tend to be more aggressive clinically, measures of proliferation are often incorporated into histological grading systems. The simplest and most widely used method is the mitotic count. The purpose of the present study was to see prediction of age among the patients presented with histopathological confirmed ductal carcinoma of breast.

Methodology

Study Settings and Population: This retrospective study was conducted in the different private diagnostic laboratory and other Hospitals of Dhaka city of Bangladesh from January 2015 to December 2018 for a period of four years. The patients who were histopathologically diagnosed case of duct cell carcinoma of breast were included as study population. Purposive and convenient sampling technique was applied to collect the sample. Sample size was based on the time period. The mastectomy specimen from female patients diagnosed as cases of duct cell carcinoma by FNAC were selected in this study. Mastectomy specimens from patients diagnosed other than duct cell carcinoma or Mastectomy specimens with previous history of lumpectomy or chemotherapy or radiotherapy were excluded from this study.

Study Procedure: The mastectomy specimen or lumpectomy specimen were collected from female patients and these were diagnosed as duct cell carcinoma by FNAC. The informed written consent to be taken from each patient. Detail clinical information with special emphasis on age, duration & size of tumor, axillary LN status and other relevant investigation reports were recorded in a questionnaire.

Specimen Processing and Storage: The resected specimens were collected in 10% buffered formalin and then, the paraffin embedded methods were applied for the processing of specimens. Tumor tissue as well as resected LN were examined macroscopically and microscopically on hematoxylin and eosin slides at 40X lens.

Statistical Analysis: Statistical analysis was performed by Windows based software named as Statistical Package for Social Science (SPSS), versions 22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Continuous data were expressed as mean, standard deviation, minimum and maximum. Categorical data were summarized in terms of frequency counts and percentages. Chi-square test was used for comparison of categorical variables and Student t test was applied for continuous variables. Every effort was made to obtain missing data. A two-sided P value of less than 0.05 was considered to indicate statistical significance. Differences between case and control were tested.

Ethical Consideration: Submitted the research protocol to the Institutional Review Board (IRB) of local institute to review the scientific and ethical issues related to the research to obtain the required approval. The study objectives were explained to each participant and written informed consent was taken from the patient who willingly participated in the study. Strictly maintained treatment and investigation papers confidentiality. The information of the treatment and investigation papers were only used for this research purpose. Thus, the researcher maintained the anonymity of the individual patients.

Results

A total number of 164 patients were recruited for this study. Most of the patients were in the age group of 40 to 50 years and 30 to 40 years which were 54(32.9%) cases and 52(31.7%) cases respectively followed by 50 to 60 years, less than 30 years and more than 60 years of age group which were 26(15.9%) cases, 22(13.4%) cases and 10(6.1%) cases respectively. The mean with standard deviation of the study population was 43.34±10.454 years with the range of 22 to 67 years (Table 1).

Table 1: Age Distribution among the Study Population

Age Group	Frequency	Percent
Less Than 30 Years	22	13.4
30 to 40 Years	52	31.7
40 to 50 Years	54	32.9
50 to 60 Years	26	15.9
More Than 60 Years	10	6.1
Total	**164**	**100.0**
Mean±SD	**43.34±10.454(22 to 67)**	

Most of the women had given the negative response about the contraceptive use which was 110(67.1%) cases. Majority of the study population had told that they had given the breast feeding during lactating period which was 132(80.5%) cases and the rest of 32(19.5%) cases had given negative

Table 2: Clinical Variables of Study Population

Variables	Frequency	Percent
Contraceptive Use		
• Yes	54	32.9
• No	110	67.1
Breast Feeding		
• Yes	132	80.5
• No	32	19.5
Family HO		
• Yes	26	15.9
• No	138	84.1
Histopathology		
• DCC	158	96.3
• Ductal Ca in situ	6	3.7
Grade		
• Grade I	25	15.8
• Grade II	111	70.3
• Grade III	22	13.9
Lymph Node Metastasis		
• Positive	98	59.8
• Negative	66	40.2

response. Almost all patients had no family history of breast cancer which was 138(84.1%) cases. Majority had suffering from ductal cell carcinoma which was 158(96.3%) cases. The grade I, grade II and grade III were detected in 25(15.8%) cases, 111(70.3%) cases and 22(13.9%) cases respectively. Lymph node metastasis was reported in most of the study population which was 98(59.8%) cases (Table 2).

Again, a prediction model was created based on tumor size with different variables of the study population. The predictive margins of a family history of breast cancer showed significant differences in tumor size. The women who had given a history of breast cancer among the family members had smaller size of tumors than those without a history. Lymph node metastasis was reported among the women who had larger tumor size than smaller size tumors. In the case of the age group considered from 22 to 62 years based on 10 10-year difference, the tumor size was increasing serially. The size of the tumor was found larger in grade I than in grades II and III which was significantly different ($p<0.05$) (Figure II).

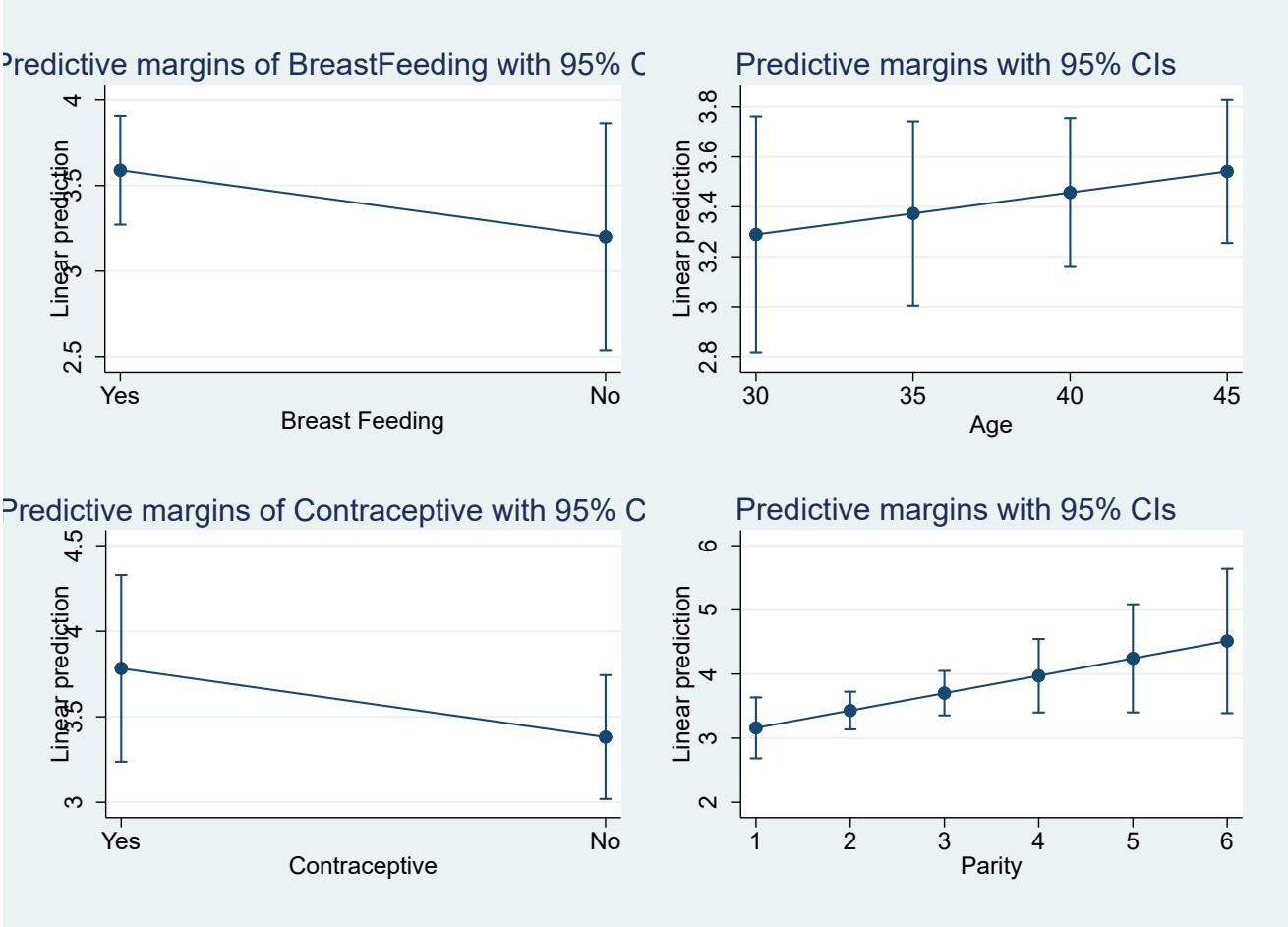

Figure I: Showing the Prediction model of Tumor Size with Breast Feeding, Age, Contraceptive use, and Parity by Margins plot

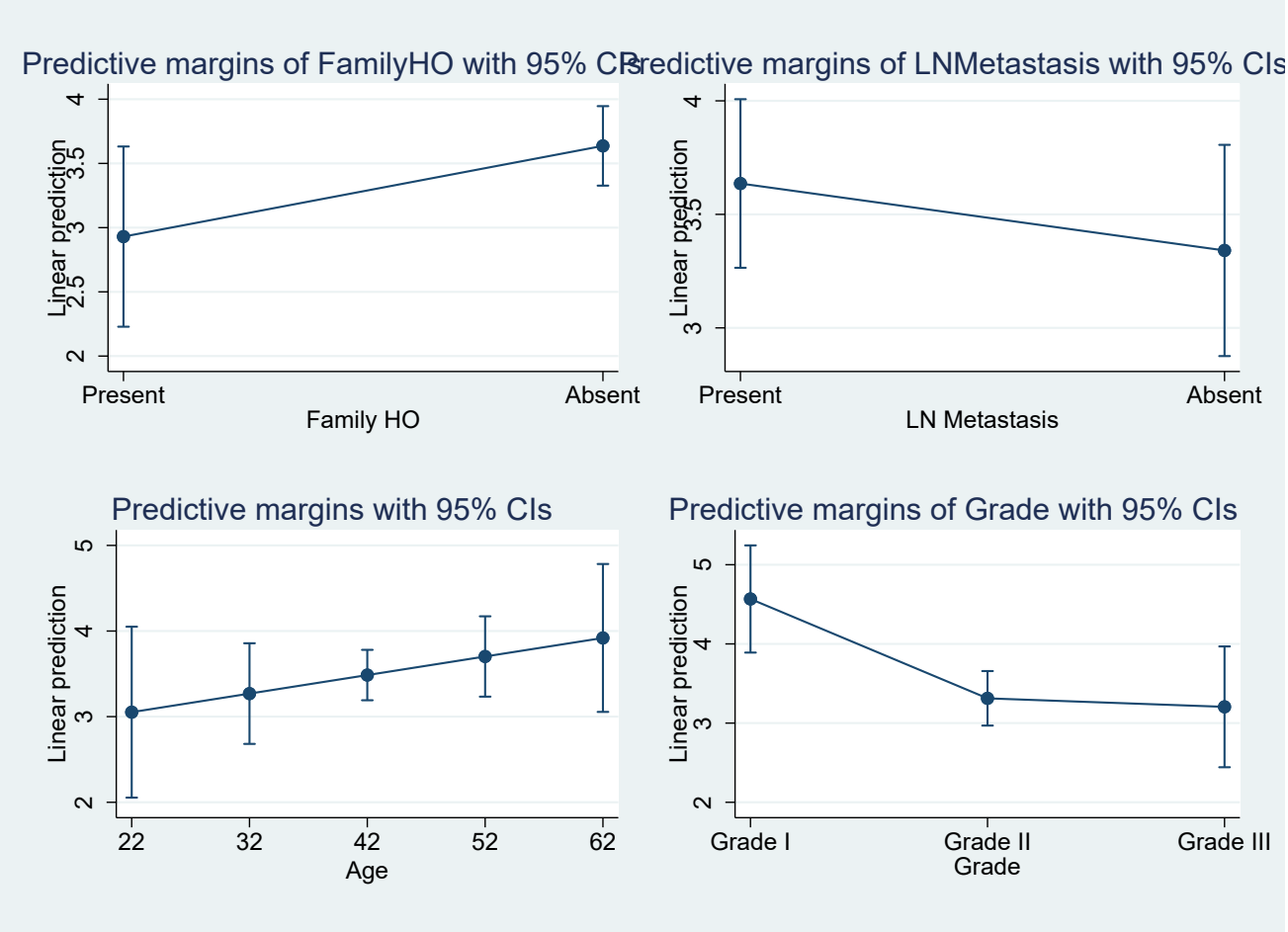

Figure II: Showing the Prediction model of Tumor Size with Family History, Lymph Node Metastasis, 10-year age Difference and Different Grades of DCC by Margins plot

Discussion

Breast cancer is the commonest form of cancer worldwide8. There is a change in pattern of disease in developing countries with the emergence of non-communicable disease alongside the resurgence of some previously controlled infectious diseases. As at 1985, of an estimated 9 million new cases of cancer each year, 4 million were in developed and 5 million in developing countries; by 2015, these figures are likely to reach 15, 5, and 10 million respectively. From these figures an increase of 25% will take place in developed countries with 100% in developing countries[9].

Globally breast cancer is the commonest cancer in the females. Worldwide it is estimated that more than one million women are diagnosed with breast cancer every year, and more than 400,000 will die from the disease[10]. The incidence of breast cancer in Nigeria in 1976 was 15.3 per 100,000 but rose to 33.6 per 100,000 by 1992. Despite this doubling in incidence, many clinicians believe that there is under-reporting owing to low awareness, poor access to medical services, poverty, socio-cultural factors and absence of a screening programme. Population based epidemiological study in 1999 showed that the prevalence of breast cancer in Nigeria was 116 cases per 100,000 women per year[11-12].

In this study a total number of 164 patients were recruited. Most of the patients were in the age group of 40 to 50 years and 30 to 40 years which were 54(32.9%) cases and 52(31.7%) cases respectively followed by 50 to 60 years, less than 30 years and more than 60 years of age group which were 26(15.9%) cases, 22(13.4%) cases and 10(6.1%) cases respectively. The mean with standard deviation of the study population was 43.34±10.454 years with the range of 22 to 67 years. In this study majority of the patients at presentation were young and premenopausal or perimenopausal. This is similar to studies from other African centres were the mean age is 48 years and approximately two-thirds are premenopausal[13-15]. This is contrary to findings in Europe were majority of the women are postmenopausal8. In the area of this study there was no population screening programme at the time of the study. If a screening programme is to be introduced this age bracket 40-49 with high incidence should be taken into consideration. Though nulliparity and low parity is said to be associated with increased risk of breast cancer, in this study majority of the patients are multiparous. With basal subtype

common in this study, it confirms other studies that have shown that the higher the parity is associated with triple negative breast cancer[10-11]. It is difficult to explain this because triple negative breast cancer is not responsive to these sex hormones associated with parity.

Most of the women had given the negative response about the contraceptive use which was 110(67.1%) cases. Majority of the study population had told that they had given the breast feeding during lactating period which was 132(80.5%) cases and the rest of 32(19.5%) cases had given negative response. Almost all patients had no family history of breast cancer which was 138(84.1%) cases. Majority had suffering from ductal cell carcinoma which was 158(96.3%) cases. The grade I, grade II and grade III were detected in 25(15.8%) cases, 111(70.3%) cases and 22(13.9%) cases respectively. Lymph node metastasis was reported in most of the study population which was 98(59.8%) cases. Only 11% of the patients presented with lumps less than 2 cm in size with majority of them having clinically palpable lymph nodes. This is in keeping with other studies from developing countries where many of the patients present with locally advanced disease. In Tanzania, East Africa, more than 70% of the patients presented at stage III or IV while in Nigeria and Libya more than half present with stage III or IV16. This is as a result of inadequate health education, socio-cultural belief, poverty, ignorance, lack of access to health care and use of unorthodox health care. There is also absence of population screening program. Early detection of breast cancer is not only cost-effective but also improves outcome. Unless a programme is in place for screening and early detection, the prognosis will continue to be poor in these resource poor countries. Our patients benefited from multidisciplinary approach required especially with many of them presenting with locally advanced disease.

Prediction model was created based on tumor size with different variables of the study population. The predictive margins of breast feeding showed significant difference of tumor size. The women who had given the history of breast feeding had larger size of tumor than non-feeding women. In case of age group considering from 30 to 45 years based on 5 years' difference, the tumor size was increasing serially. Among contraceptive users the size of tumor was found larger than non-users which was significantly different ($p<0.05$). Prediction model of parity showed the significant difference among the different parity which was increased based on the increase number of parity ($p<0.05$).

Majority of the patients who had modified radical mastectomy had basal-like subtype of breast cancer. Mastectomy was usually followed by chemotherapy with or without radiotherapy. This is because the patients do not benefit from hormonal manipulation. The commonest subtype in this study is basal-like. This is similar to other studies from resource poor countries.

Systemic therapies are known to improve breast cancer survival. In this study many of the patients required systemic therapy. Unfortunately, like other developing countries chemotherapy requires some allocation of resources and infrastructure which may not be readily available. Most of our patients had CMF regimen because it was the cheapest available at the time of this study.

Conclusion

In conclusion prediction model shows significant difference in the size of the tumor with the age group, history of breast feeding and contraceptive use.

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Conflict of interest
None declared.
Financial Disclosure
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Authors' Contributions
Khanam R, Khanam S conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript. Kabir T, Kabir E involved in the manuscript review and editing. All authors read and approved the final manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

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References

1. Fisher ER, Anderson S, Tan-Chiu E, Fisher B, Eaton L, Wolmark N. Fifteen-year prognostic discriminants for invasive breast carcinoma: National Surgical Adjuvant Breast and Bowel Project Protocol-06. Cancer: Interdisciplinary International Journal of the American Cancer Society. 2001;91(S8):1679-87.
2. Khan MZ, Haleem A, Al Hassani H, Kfoury H. Cytopathological grading, as a predictor of histopathological grade, in ductal carcinoma (NOS) of breast, on air-dried Diff-Quik smears. Diagnostic cytopathology. 2003;29(4):185-93.
3. Kollias J, Ellis IO, Elston CW, Blamey RW. Clinical and histological predictors of contralateral breast cancer. European journal of surgical oncology. 1999;25(6):584-9.
4. Zhang D, Geng X, Suo S, Zhuang Z, Gu Y, Hua J. The predictive value of DKI in breast cancer: Does tumour subtype affect pathological response evaluations? Magnetic resonance imaging. 2022;85:28-34.
5. Yalavarthi S, Tanikella R, Prabhala S, Tallam US. Histopathological and

cytological correlation of tumors of breast. Medical Journal of Dr. DY Patil University. 2014;7(3):326.
6. Rahman GA. Breast conserving therapy: a surgical technique where little can mean more. Journal of Surgical Technique and Case Report. 2011;3(1):1–4
7. Ikpatt OF, Kronqvist P, Kuopio T, Ndoma-Egba R, Collan Y. Histopathology of breast cancer in different populations: Comparative analysis for Finland and Africa. Electronic Journal of Pathology and Histology. 2002;8(4):24011–24018.
8. Siegel R, Naishadham D, Jemal A. Cancer statistics. CA: A Cancer Journal for Clinicians. 2012;62(1):10–29
9. WHO. 2nd Ed. Policies and managerial guideline; 2002. Publication National Cancer Control Programme
10. Tfayli A, Temraz S, Abou Mrad R, Shamseddine A. Breast cancer in low-income and middle-income countries: emerging and challenging epidemic. J Oncol 2010;15:490631
11. Health Wales NHS Trust Public. Cardiff, UK: Welsh Cancer Intelligence and Surveillance Unit; 2010. WCISU Annual Publication No- SA10/01: Cancer Incidence in Wales 2004-2008
12. Cancer Registry Finnish. Helsinki, Finland: Institute for Statistical and Epidemiological Cancer Research; 2011. Cancer stat fact sheets.
13. Adesunkanmi ARK, Lawal OO, Adelusola KA, Durosimi MA. The severity, outcome and challenges of breast cancer in Nigeria. Breast. 2006;15(3):399–409
14. Registry of Norway Cancer. Oslo, Norway: Cancer Registry of Norway; 2011. Cancer in Norway: Cancer in Norway 2009- Cancer incidence, mortality, survival and prevalence in Norway.
15. Rambau PF, Chalya PL, Manyama MM, Jackson KJ. Pathological features of Breast Cancer seen in Northwestern Tanzania: A nine years' retrospective study. BMC Research Notes. 2011:214
16. Abdulrahman GO, Jr, Rahman GA. Epidemilogy of Breast Cancer in Europe and Africa. J Cancer Epidemiol. 2012;2012:915610

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Original Article ***Open Access***

Comparison of Preoperative Fascia Iliaca Compartment Block and Femoral Nerve Block as Analgesic during Regional Block among Femur Neck Fracture Patients: A Parallel Arm Double-Blind Randomized Control Trial

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Abstract

Background: During corrective surgery under spinal anesthesia for proximal femur fracture, femoral nerve block (FNB) and fascia iliaca compartment block (FICB) are two procedures for the reduction of pain. **Objective:** The purpose of this study was to investigate the analgesic effects of FICB vs FNB. **Methodology:** This was a randomized controlled trial with 60 patients undergoing fracture neck femur surgery under SAB were randomized to two groups. In group A, FNB 10 ml of 0.25% bupivacaine plus 3 ml lidocaine with epinephrine was added with 7 ml of distilled water, In group B: 20 ml of 0.25% bupi-vacaine plus 6 ml lidocaine with epinephrine was added with 14 ml distilled water. The onset of sen-sory block, intraoperative hemodynamic changes, and adverse effects were recorded in a predesigned case record form. **Results:** Different comorbidities showed that DM was 6(20%) and 7(23.7%), HTN was 9(30%) and 6(20%) in Group A and Group B respectively. Other comorbidities were IHD, COPD, asthma, etc. Regarding hemodynamic changes of pulse in both groups during follow-up after anesthesia where changes were even in both Group A and Group B also SBP and DBP changes were found in both Group A and Group B. Assessment of VAS score before and after anesthesia revealed VAS was found significantly low in Group A patients 25 mins after the onset of anesthesia ($p<0.05$). Pain during positioning showed it was 27 (90%) in Grade 1 in Group A and 26 (86.66%) in Group B. Again 26 (86.66%) had A in Group A and 24 (80%) in Group B as the best angle obtained by patients during spinal anesthesia. **Conclusions:** The study result is important for the anesthetist in selecting an ideal block to help in positioning during SAB for a fractured neck femur patient. *[Journal of Army Medical College Jashore, July, 2023;4(2):72-77]*

Keywords: Femoral nerve block; fascia iliaca compartment block; spinal anesthesia; femur fracture

Introduction

Proximal femur fractures are one of the most common fractures, especially in the elderly population. It affects an estimated 65000 patients per annum. These injuries affect an increasing elderly popula-tion, many of whom have significant co-morbidities and are subject to polypharmacy. Research has shown that pain left untreated may have significant physical and psychological effects on the patient, may delay operative management, and complicate hospital stay[1]. Early surgical fixation is the best an-algesic for associated pain[2]. Spinal anesthesia has been favored by many anesthetists due to the sim-plicity of the technique, better analgesic profile, and lower incidence of complications like delirium and thromboembolic events[3,4,5]. However, severe pain encountered during positioning for spinal anes-thesia, can complicate the technique and worsen the patient experience. Conventional pain relief can often cause undesirable side effects in this cohort of patients. In particular, bolus opioids can lead to respiratory depression, hypotension, and confusion and non-steroidal anti-inflammatories may cause renal impairment. To avoid these complications, different regional blocks were employed to facilitate patient positioning for spinal

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anesthesia which include femoral nerve block (FNB), fascia iliaca com-partment block (FICB), and lateral cutaneous nerve block (LCNB)[6-8]. Fascia iliaca compartment block (FICB) was first introduced by Dalen et al in 1989[9]. This regional block technique was used to block the lateral femoral cutaneous nerve of the thigh and the obturator nerve with a high level of safety and success[10-11]. Fascia iliaca compartment block (FICB) provides a safe, cheap, and effective form of pain relief for patients with neck of femur fractures, and indeed for those with femoral shaft frac-tures. Femoral Nerve Block (FNB) also used for analgesic purposes provides analgesia to the anterior thigh, including the flexor muscles of the hip and extensor muscles of the knee with blocking of the lateral femoral cutaneous nerve in the same shot, but the obturator can escape.

FNB is also used during neck fracture surgeries frequently. It provides analgesia in fractured neck & shaft of femur and patellar injuries. The anatomic location of the femoral nerve makes this block one of the easiest to perform but its proximity to the large femoral artery may increase the accidental inju-ry to the great vessel with blind procedure. In comparison, FICB is placed more laterally than FNB thereby decreasing the potential for intravascular or intraneural injection. Each of these methods has its limitations which may include femoral nerve injury, hematoma, and so on. With the development of the peripheral nerve block technique, FNB and FICB have been widely used for acute pain man-agement for positioning of SAB in fracture neck femur surgery[11]. The study was designed to compare FICB with FNB for providing analgesia during positioning for spinal anesthesia in fractured neck fe-mur patients.

Methodology

Study Settings: This was a single-blind randomized controlled trial carried out in the Department of Anesthesiology in collaboration with the Department of Orthopedic Surgery of Chattogram Medical College Hospital, Chattogram, Bangladesh for a period of one year from October 2020 to September 2021.

Study Population: All adult patients admitted for lower limb orthopedic surgery for fractured neck femur in CMCH during the study period were the study population. Consecutive patients from the study population were screened by the inclusion and exclusion criteria to select eligible participants. Patients undergoing lower limb surgeries under subarachnoid block(SAB) for fractured neck of femur, age between 20 and 80 years of either gender were included and patients in whom surgery lasted for more than 3 hours and with inadequate block requiring supplemental anesthesia, patients with known allergy to local anesthetic agent, patients on chronic use of analgesic medication patients with coag-ulopathy or potent antiplatelet or anticoagulants, having spine deformity, back problems, local skin infection at the site of injection, poor myocardial contractility(ASA III or more), pre-existing neuro-logical deficits in the lower extremities, psychological problems and patients who did not give consent were excluded.

Randomization and Blinding: After consenting, eligible individuals were recruited consecutively and randomly assigned in a 1:1 ratio (block size of two) with a computer-generated randomization list, to one of the treatment arms. Study subjects who satisfied the eligibility criteria received the investiga-tional product corresponding to a consecutive number assigned according to their entrance to the study. The investigator randomly selected the process of sequence.

Allocation: Patients were randomly divided into the following two groups (30 patients in each group) GROUP – A (FICB) and GROUP – B (FNB). Proper pre-anesthetic assessment was done the day be-fore surgery and the necessary clinical and laboratory investigations would be done accordingly. Pa-tient baseline characteristics such as age, sex, and height were recorded. After the inclusion of the pa-tients in the study, the research methodology and assessment of pain intensity by the visual analog scale (VAS) were explained to them on the day of operation by an anesthetist. At the entrance to the operation room intravenous access was initiated with an 18G intravenous cannula in a wide caliber vein at the forearm and co-loading was done with pre-warmed 500 ml of Ringers lactate solution in-fused within 15 mins before giving intrathecal local anesthetics. Next, standard monitoring was ap-plied with automated non-invasive blood pressure measurement, electrocardiography, and pulse oxi-metry, with the objective of obtaining the baseline cardiovascular parameters. Patients of Group A received FICB which was given in a supine position as per the technique described by Range et al[12]. In this technique, A line is drawn on the skin connecting the anterior superior iliac spine to the pubic tubercle; at the level of inguinal ligament this line was divided into three equal parts, at the junction of the lateral and medial two-thirds; a second line is drawn perpendicular to and intersecting the line join-ing anterior superior iliac spine and pubic tubercle, one cm below this line is the insertion point. A Touhy needle is inserted perpendicular to the skin at this point, as soon as two “pop-up” sensations are felt, first as the needle passes through the fascia Lata and the second when a loss of resistance is felt, as it passes through the fascia iliac, after this angle is reduced to 30 degrees and the needle is ad-vanced 1-2 mm further, anesthetic solution containing 35-40 ml of 0.25%bupivacaine is injected after negative aspiration of blood. A distal compression was applied immediately caudal to the needle puncture site for 10 mins to favor the proximal spread of drug[12]. In patients of Group B, FNB was given. In this procedure, patients were in the supine position. A line was drawn on the skin connecting the anterior superior iliac spine to the pubic tubercle; at the level of the inguinal ligament, this line was divided into two equal parts. One Cm below the inguinal ligament femoral pulse was palpated. One cm below the inguinal ligament and one

cm lateral to the femoral artery a 22-gauge needle was intro-duced perpendicularly. A distinct "pop" is often felt as the surrounding sheath is entered and a pares-thesia or a motor-evoked response can usually be elicited. After negative aspiration for blood, 20 ml 0.25% bupivacaine was injected to produce an analgesic effect[13].

Follow-Up and Outcomes Measures: Patients' arterial blood pressure and electrocardiographic trac-ings, respiratory rate, and pulse oximeter were evaluated noninvasively at 5-minute intervals for 30 min after the injection. Also, patients were carefully observed to detect any symptoms of LA toxicity of the anesthetic agent. Pain during positioning for spinal anesthesia was assessed and categorized into one of the following grades as modified from previous studies[14-16]; grade 1: included patients sitting without pain and with minimum help, grade 2 patients complained of mild pain detected by grimacing or verbal expression, grade 3: patient expresses severe pain but can tolerate positioning with help, grade 4: patient cannot tolerate positioning and required additional analgesia. Also, the best angle ob-tained by the patient during spinal anesthesia was classified into the following categories Good flexion (angle more than 90), average flexion (angle less than 90) without twisting or using the hands for sup-port, and poor flexion and twisting or hand support. A member of the research team surveyed the an-esthesiologist performing the block for operator satisfaction after the procedure (Excellent, Good, Fair, and Poor). The time required by the anesthesiologist for a successful spinal injection and the number of trials were recorded. VAS was monitored before and after FNB and FICB at the time of positioning for spinal anesthesia[17].

Statistical Analysis: Statistical analysis was performed by Windows-based software named Statistical Package for Social Science (SPSS), version 22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Continuous data were expressed as mean, standard deviation, minimum, and maximum. Categorical data were summarized in terms of frequency counts and percentages. The chi-square test was used for the comparison of categorical variables and the Student t-test was applied for continuous variables. Every effort was made to obtain missing data. A two-sided P value of less than 0.05 was considered to indicate statistical significance. Differences between case and control were tested.

Ethical Consideration: Submitted the research protocol to the Institutional Review Board (IRB) of the local institute to review the scientific and ethical issues related to the research to obtain the required approval. The study objectives were explained to each participant and written informed consent was taken from the patient who willingly participated in the study. Strictly maintained treatment and inves-tigation papers confidentiality. The information on the treatment and investigation papers was only used for this research purpose. Thus, the researcher maintained the anonymity of the individual pa-tients.

Results

Table 1 shows gender distribution was equal in both groups, mean ± SD of age was 58.0±7.8 years in Group A and 60.0±8.8 years in Group B, and height weight and BMI were distributed equally, ASA classifications were also distributed equally. Anesthesia time was 108.0±116.5 mins and 105± 11.5 operation time(Min) was 63.5±17.5 and 60.5±11.8 mins and blood loss(ml) was 105±11.5ml and 108.0±116.5 ml in Group A and Group B respectively.

Table 1: Comparison of the Demographic Characteristics of Patients between 2 Groups

Variables	Group A(FICB)	Group B(FNB)	P value
Gender(M/F)	16/14	15/15	0.32
Age(Years)	58.0±7.8	60.0±8.8	0.21
Height(cm)	158.2±7.4	158± 8.1	0.43
Weight(Kg)	59.9±10.5	59.8±101.5	0.45
BMI	22.9±1.6	22.9±1.5	0.56
ASA Classification (I/II/II/IV)	28/2/0/0	27/3/0/0	0.600
Anesthesia time(Min)	118.3± 23.6	119.4± 21.1	0.65
Operation time(Min)	63.5±17.5	60.5±11.8	0.091
Blood loss(ml)	105± 11.5	108.0±116.5	0.76

Table 2 showing different comorbidities where DM was 6(20%) and 7(23.7%), HTN was 9(30%) and 6(20%) in

Table 2: Comorbidities of the study subjects

Variables	Group A (FICB) (n=30)	Group B (FNB) (n=30)
DM	6(20%)	7(23.3%)
HTN	9(30%)	6(20%)
IHD	3(9.99%)	3(9.99%)
COPD	2(6.66%)	1(3.33%)
Asthma	1(3.33%)	2(6.66%)
Others	3(9.99%)	2(6.66%)

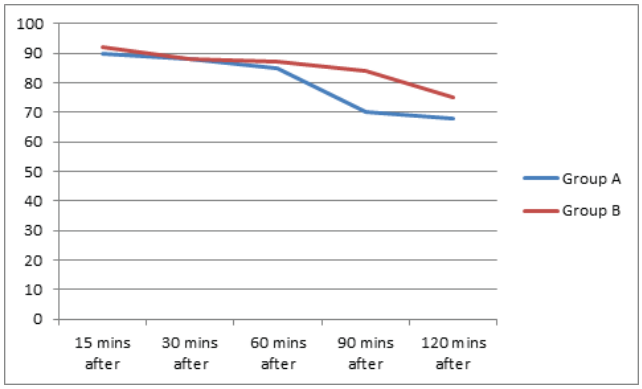

Figure I: Change of pulse in Group A and Group B patients

Group A and Group B respectively. Other comorbidities were IHD, COPD, asthma, etc.

Figure I shows changes in pulse in both groups during follow-up after anesthesia where pulse changes were even in both Group B and Group B.

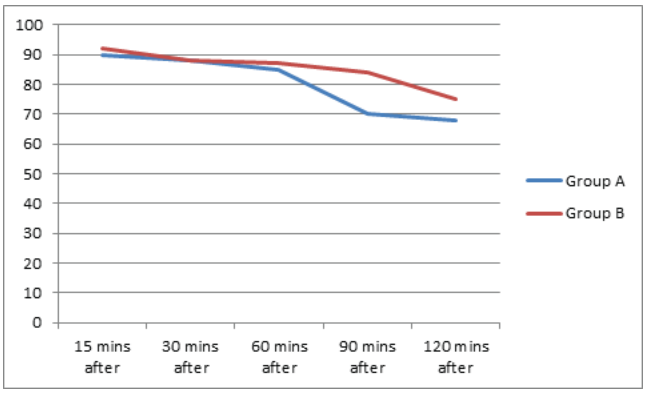

Figure IIa: Changes in SBP in Group A and Group B patients

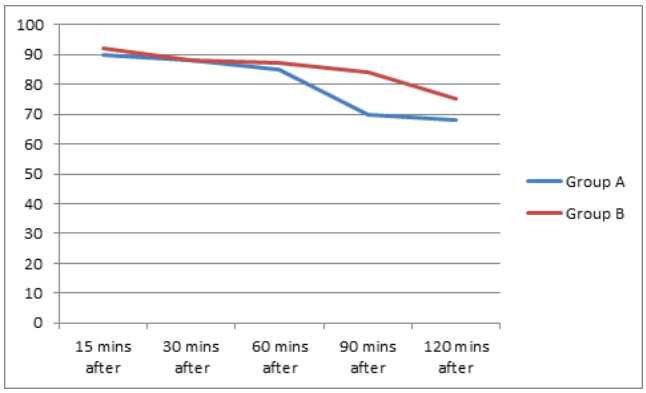

Figure IIb: Changes in DBP in Group A and Group B patients

Figures IIa and IIb show SBP and DBP changes where changes were found even in both Group A and Group B.

Table 3 shows an assessment of VAS score before and after anesthesia where VAS was found signifi-cantly low in Group A patients 25 mins after the onset of anesthesia ($p<0.05$).

Table 4 shows pain during positioning where it was 27 (90%) in Grade 1 in Group A and 26 (86.66%) in Group B. Again 26 (86.66%) had A in Group A and 24 (80%) in Group B as best angle obtained by patients during spinal anesthesia.

Table 4: Pain assessment by grading and angels after anesthesia

Pain Assessment Tool	Findings	Group A	Group B
Pain during positioning	Grade 1	27(90%)	26(86.66%)
for spinal anesthesia	Grade 2	2(6.66%)	3(9.99%)
	Grade 3	1(3.335)	1(3.33%)
Best Angle Obtained	A	26(86.66%)	24(80%)
by Patient During	B	4(13.33%)	4(13.33%)
Spinal Anesthesia	C	0	2(6.66%)

Discussion

The objective was to evaluate the effect of the FICB vs FNB as postoperative analgesia in fracture neck femur surgery. Our study shows that FICB has more pain reduction than FNB during the postop-erative period. The hip joint is innervated by multiple nerves. The anterior and anteromedial part in the capsule of the hip joint is innervated by the obturator nerve and femoral nerve. The posterior part is innervated by the sciatic nerve, which in addition to the articular branches from the nerves to the quadratus femoris muscle innervates the posteromedial part of the joint capsule. Moreover, the articu-lar branches of the superior gluteal nerve innervate the posterolateral section of the joint capsule[19]. Therefore, regional techniques to block the lumbar plexus such as the FICB, psoas compartment block, 3 in 1 block, and so on are the best choice for postoperative analgesia in hip surgery. Among them, the FICB is easy to perform and is accessed via a minimal-risk approach to block the lumbar plexus. Previous studies show that the FICB has an analgesic effect after hip surgery, and their results are consistent with our conclusion. Arrola et al[20] performed a prospective observational study of 41 patients undergoing total hip replacement surgery, and the FICB was effective in controlling early postoperative pain after surgery. Moreover, Krych et al[21] reported that the FICB decreased opioid con-sumption and provided a high quality of pain relief and high overall patient satisfaction in patients with hip surgery.

In our study, femoral nerve block shows that the technique in our study is not sufficient to block the branches of the lumbar plexus such as femoral nerve, obturator nerve, and lateral femoral cutaneous nerve. Therefore, the proximal spreading of local anesthetics was not achieved because the infrain-guinal technique and transverse plane were used rather than the longitudinal plane as evidenced by less pain

Table 3: Assessment of pain by VAS

Groups	VAS before block Mean ± SD	VAS 5 minutes after the block Mean ± SD	VAS 10 mins after the block Mean ± SD	VAS 25 mins after the block Mean ± SD
Group A	88 .44 ± 12.33	67 23 ± 10.31	67 34 ± 7.33	43 24 ± 6.43
Group B	87 34 ± 11.33	68.45 ± 9.23	70 66 ± 8.23	54 41 ± 12.13
P value	0.34	0.45	0.45	0.011

reduction in FNB. When the FICB was performed, proximal spreading of the local anesthetic was an important factor because the FICB aims to block the branches of the lumbar plexus. There-fore, our study used 2 ways including large volume and modified technique for ensuring the proximal spreading of local anesthetics.

The sensorial innervation of the hip is provided by the lumbar plexus and sacral plexus. Although whether lumbar or sacral plexus has a primary effect on sensorial innervation of the hip remains un-known, according to some studies, lumbar plexus block can provide effective analgesia[22,23]. Lumbar plexus femoral nerve block was first developed by Winnie et al. in 1973[24]. 3 A 1 block is described as blocking the femoral nerve, lateral cutaneous femoral nerve, and obturator nerve with an injection to the inguinal ligament[24]. However, this block does not reliably block the obturator and lateral femoral cutaneous nerves and is now known as simply a femoral nerve block. Later Dalens et al[25] accidentally found FICB while trying to perform lateral femoral cutaneous nerve block[3]. This procedure blocked the three stated nerves more successfully (more than 90%) than the 3-in-1 block[22]. Neurostimulators are not needed in FICB procedure, and it is felt to be safer because it is far from neurovascular struc-tures[22].

The stress response increases with surgical traumas. The application of nerve block for modifying en-docrine and metabolic responses is one of the most popular subjects recently because the stress re-sponse is thought to be unnecessary at surgical approaches. Regional blockage techniques that are per-formed with local anesthetic agents prevent endocrine and metabolic responses at pelvic and lower extremity surgeries. The increase in plasma concentrations of both hormones may be measured sever-al minutes after the surgery starts.

Limitations of research: Due to time and resource constraints the sample size was limited.

Conclusion

In conclusion, the FICB and FNB are parts of multimodal analgesic treatment to enable postoperative analgesia in hip surgery and these methods should be employed safely and efficiently. The assess-ment of VAS score before and after anesthesia where VAS was found significantly low in Group A patients 25 mins after the onset of anesthesia.

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Conflict of interest
None declared.
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Authors' Contributions
Tanzil T, Das A, and Chowdhury SR conceived and designed the study analyzed the data, interpreted the results, and wrote up the draft manuscript. Tanzil T was involved in the manuscript review and editing. All authors read and approved the final manuscript.

Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

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References

1. Viscusi ER, Pappagallo M. A review of opioids for in-hospital pain management. Hospital Practice, 2012;40(1):149-159
2. Griffiths R, Alper J, Beckingsale A, Goldhill D, Heyburn G, Holloway J, et al. Management of proximal femoral fractures. Anaes-thesia 2012;67(1):85–98.
3. Van Waesberghe J, Stevanovic A, Rossaint R, et al. General vs. neuraxial anesthesia in hip fracture patients: a systematic review and meta-analysis. BMC Anesthesiol. 2017;17
4. Kowark A, Rossaint R, Coburn M. General versus spinal anesthesia for the elderly hip fractured patient. Curr Opin Anaesthesiol. 2019;32:116–119.
5. Atallah M, Abdel Dayem O . Effect of different barites of intrathecal bupivacaine on the quality of spinal block in elderly patients undergoing transurethral resection of the prostate. Res Opin Anesth Intensive Care. 2015;2:121
6. Dolan J, Williams A, Murney E, Smith M, Kenny GN. Ultrasound-guided fascia iliaca block: a comparison with the loss of re-sistance technique. Reg Anesth Pain Med. 2008;33(6):526–531
7. Deniz S, Atım A, Kürklü M, Çaycı T, Kurt E. Comparison of the postopera-tive analgesic efficacy of an ultrasound-guided fascia iliaca compartment block versus 3 in 1 block in hip prosthesis surgery. Agri. 2014; 26(4):151–157
8. Dalens B, Vanneuville G, Tanguy A. Comparison of the fascia iliaca compartment block with the 3-in-1 block in children. Anesth Analg. 1989;69(6):705–713.
9. Dolan J, Williams A, Murney E, Smith M, Kenny GN. Ultrasound-guided fascia iliaca block: a comparison with the loss of re-sistance technique. Reg Anesth Pain Med. 2008;33(6):526–531
10. Deniz S, Atım A, Kürklü M, Çaycı T, Kurt E. Comparison of the postoper-ative analgesic efficacy of an ultrasound-guided fascia iliaca compartment block versus 3 in 1 block in hip prosthesis surgery. Agri. 2014;26(4):151–157.
11. Range C, Egele C. Fascia iliaca compartment block: Landmark and ultrasound approach. Anaesthesia tutorial of the week: World Federation Society of Anaesthesiologists 2010;193
12. G Edward Morgan, Maged S Mikhail, Michael J. Murray, Clinical Anesthesiology.3rd Edition:299
13. Lee KH, Lee SJ, Park JH, et al. Analgesia for spinal anesthesia position-ing in elderly patients with proximal femoral fractures: dexmedetomi-dine-ketamine versus dexmedetomidine-fentanyl. Medicine (Baltimore). 2020;99:e20001.
14. Sia S, Pelusio F, Barbagli, et al. Analgesia before performing a spinal

block in the sitting position in patients with femoral shaft fracture: a comparison between femoral nerve block and intravenous fentanyl. Anesth Analg.2004;99:1221-1224.
15. Kumar A, Sinha C. Kumar A.et al. Positioning of fracture femur patients for spinal anesthesia: femoral nerve block or intravenous fentanyl. Bali J Anesthesiol.2018;2:61.
16. Alrefaey K. Alrefaey & Mohamed A. Abouelela(2020) Pericapsular nerve group block for analgesia of positioning pain during spinal anesthesia in hip fracture patients, a randomized controlled study. Egyptian Journal of Anaesthesia, 36:1, 234-239.
17. Pereira J, Lawlor P, Vigano A, et al. Equianalgesic dose ratios for opioids. A critical review and proposals for long-term dosing. J Pain Symptom Manage 2001;22:672–87
18. Birnbaum K, Prescher A, Hessler S, et al. The sensory innervation of the hip joint—an anatomical study. Surg Radiol Anat 1997;19:371–5.
19. Goitia Arrola L, Telletxea S, Martinez Bourio R, et al. [Fascia iliaca compartment block for analgesia following total hip replace-ment surgery]. Rev Esp Anestesiol Reanim 2009;56:343–8.
20. Krych AJ, Baran S, Kuzma SA, et al. Utility of multimodal analgesia with fascia iliaca blockade for acute pain management follow-ing hip arthroscopy. Knee Surg Sports Traumatol Arthrosc 2014;22:843–7.
21. Inan N, Akin Takmaz S, Iltar S, Yazici I, Başar H. The effects of two different multimodal analgesic regimens in total hip replace-ment surgery. Agri 2009;21(2):69-74
22. Capdevila X, Biboulet P, Bouregba M, Barthelet Y, Rubenovitch J, d'Athis F. Comparison of the three-in-one and fascia iliaca compartment blocks in adults: clinical and radiographic analysis. Anesth Analg 1998;86:1039-44
23. Winnie AP, Ramamurthy S, Durrani Z. The inguinal paravascular technic of lumbar plexus anesthesia: the "3-in-1 block". Anesth Analg 1973;52(6):989-96
24. Dalens B, Vanneuville G, Tanguy A. Comparison of the fascia iliaca compartment block with the 3-in-1 block in children. Anesth Analg 1989;69:705-13.
25. Desborough JP. The stress response to trauma and surgery. Br J Anaesth 2000;85(1):109-17

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Original Article ***Open Access***

Types of Traumatic Knee Injuries Evaluated by Magnetic Resonance Imaging

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Abstract

Background: Excellent soft tissue contrast resolution and multiplanar imaging capabilities of Magnetic Resonance Imaging (MRI) make it superior over other imaging techniques in the evaluation of traumatic knee injuries. **Objective:** The aim of this study was to see the types of post traumatic knee injuries evaluated by Magnetic Resonance Imaging. **Methodology:** This observational cross sectional study was conducted at Combined Military Hospital, Jashore through the years from July 2021 to Feb 2022. Total hundred convenient patients within age range 20 to 70 years having history of knee joint injury and positive X-ray findings were evaluated by Magnetic Resonance Imaging. **Results:** In this study, the age group of 20 to 30 years was the most affected group with a frequency of 36(36%), subsequently 31 to 40 years with a frequency of 30(30%), 41 to 50 years with a frequency of 18(18%) and lastly 51 to 70 years with a frequency of 16(16.0%) were found. Anterior cruciate ligament (ACL) was the most common injury in 30 patients (30%). Then medial meniscal (MM) tears in 25(25.0%) patients, followed by lateral collateral ligament (LCL) injury in 11(11.0%) cases; lateral meniscus (LM) injury in 9(9.0%) cases, medial collateral ligament (MCL) injury in 9(9.0%) cases, osteochondral lesion in 4(4.0%) patients, popliteal injury in 3(3.0%) patients, posterior cruciate ligament (PCL) injury in 3(3.0%) patients, patellar fractures in 2(2.0%) patients. No significant MRI findings were observed in 4(4.0%) cases. Sports related injury was found in 73(73.0%) cases whereas non-sports related injury were found in 27(27.0%) cases. **Conclusion:** Magnetic resonance imaging is an excellent noninvasive diagnostic tool for evaluation of types of post traumatic knee joint injury. *[Journal of Army Medical College Jashore, July, 2023;4(2):78-81]*

Keywords: MRI; Trauma; knee joint; meniscal tear; collateral ligament injury; cruciate ligament injury

Introduction

The knee joint is the largest synovial joint in the human body[1]. It allows different types of movement. This joint is very important for movement and weight bearing. Knee joint consists of bones, ligaments, tendons and menisci[2]. Anterior cruciate ligament, menisci, collateral ligament are frequently injured. Early detection of types of injuries is very important to prevent the long-term effects of delayed treatment[3]. The initial radiograph of X-ray of post traumatic knee gives information about soft tissue swelling, effusion and fracture. Initial X-ray also helped to detect the onset of post-traumatic joint degeneration[4-5]. But the types of soft tissue like menisci, ligaments and tendon injury could not be evaluated by x-ray. Patients with history of trauma in the knee joints initially go for X-ray. Then MRI is usually suggested for further evaluation and detecting the types of injury.

Trauma frequently causes injuries of the anterior cruciate ligament and victims are mostly athletes. Rupture of ACL occur in about 100,000 to 200,000 cases in the United States per year[6-7]. Posterior cruciate ligament is less frequently injured than ACL in trauma[8-9].

Magnetic Resonance Imaging is a noninvasive, radiation-free modality. It is the most accurate investigation for diagnosing meniscal lesions and for eliminating unnecessary arthroscopies[10-11]. In traumatic knee, medial meniscus injury is more frequent than the lateral meniscus and MCL is more frequently injured than LCL[12-13]. Knee pain is one of the most common reasons for orthopedic

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outpatient visits in the world. The aim of this study was to see the types of traumatic knee injuries evaluated by Magnetic Resonance Imaging.

Methodology

Study Settings and Population: This cross sectional obsevational study was conducted at Department of Radiology in Combined Military Hospital, Jashore, Bangladesh within the period of July 2021 to Feb 2022. This study was conducted in hundred patients who were subjected to trauma and that had a significant impact on their knee joint. The age of the patients was between 20 to 70 years. All these patients had initial x-ray, then further evaluation for detecting the types of injury was done by magnetic resonance imaging using Philips 1.5 Tesla MRI systems with a dedicated knee coil for Knee joint following the protocol of combined military hospital, Jashore, Bangladesh. Patients visited hospital with a history of knee injury and after initial x-ray needed further evaluation for type of injury due to clinical suspicions were included in this study. Patients with implant like ferromagnetic implants, pacemakers, cochlear implants, and aneurysmal clips or degenerative diseases like arthritis, infection, neoplasm, and history of previous surgery in knee were excluded from this study.

Statistical Analysis: Data were collected and analyzed by using SPSS version 19. MRI results of the different group of patients in the study were reviewed by two skillful radiologists and the results were presented accordingly. The confidentiality of patients was maintained strictly.

Results

A total number of 100 knee joint injured patients were included in this study. The number of male patients 78 (78%) was higher than the number of female patients 22(22%) cases (Table 1).

Table 1: Socio-demographic Characteristics of Patients (n=100)

Variables	Values
Gender	
• Male	78.0%
• Female	22.0%
Age Group	
• 20 to 30 Years	36.0%
• 31 to 40 Years	30.0%
• 41 to 50 Years	18.0%
• 51 to 70 Years	16.0%
Knee Injury related with sports	
• Sports related	73.0%
• Non-sports related	23.0%

In this study, the age group of 20 to 30 years was the most affected group with a frequency of 36(36%), subsequently 31 to 40 years with a frequency of 30(30%), 41 to 50 years with a frequency of 18(18%) and lastly 51 to 70 years with a frequency of 16(16.0%) were found. This result reflects that the activity is increased at the age ranged between 20 to 40 years and causes many problems related to knee joints compared to the rest of the ages that recorded a lower rate. This study showed that sports related injury in 73 patients (73%) whereas non-sports occupying patients were only 27 (27.0%) (Table 1).

Table 2: Distribution of patients according to MRI results (n=100)

Types of Injury	Frequency	Percent
ACL injury	30	30.0
PCL injury	3	3.0
MM injury	25	25.0
LM injury	9	9.0
LCL Injury	11	11.0
MCL Injury	9	9.0
Popliteal tendon injury	3	3.0
Osteochondral lesions	4	4.0
Patellar fracture	2	2.0
Normal knee	4	4.0
Total	**100**	**100.00**

In this study, anterior cruciate ligament (ACL) was the most common injury in 30 patients (30%). Then medial meniscal (MM) tears in 25(25.0%) patients, followed by lateral collateral ligament (LCL) injury in 11(11.0%) cases; lateral meniscus (LM) injury in 9(9.0%) cases, medial collateral ligament (MCL) injury in 9(9.0%) cases, osteochondral lesion in 4(4.0%) patients, popliteal injury in 3(3.0%) patients, posterior cruciate ligament (PCL) injury in 3(3.0%) patients, patellar fractures in 2(2.0%) patients. No significant MRI findings were observed in 4(4.0%) cases. (Table 2).

Discussion

This current study showed that out of hundred patients, the age group of 20 to 30 years was the most affected group with a frequency of knee injury in 36(36%) case, subsequently 31 to 40 years with a frequency of 30(30%), 41 to 50 years with a frequency of 18(18%) and lastly 51 to 70 years with a frequency of 16(16.0%) was found. In a study done by Ikhlas et al[14], the age group of (26-46) years was found to be the most affected group with a frequency of 33 (38.8%). Subsequently, age group of (15-25) years with a frequency of 25 (29.4%), age group of 47-67 years with a frequency of 24 (28.2%) was found. The age groups of (<15) and (>67) years were the least affected group with a frequency of 2 (2.4%) and one (1.2%) respectively, which is very similar to this study.

This current study showed that the males were more affected than females. Number of male patients were seventy-eight (78%) which was higher than the number of female patients 22(22%). Umap et al15 also had similar finding which

showed that the majority (80%) of the patients were male with the male-to-female ratio being 4:1. In the study by Ikhlas et al14 found out that, among eighty-five patients, the number of male patients having injury of knee joints was 59 (69.4%) which was higher than that of female patients 26(30.6%).

In this study, anterior cruciate ligament (ACL) was found to be the most common injury occurred in 30 patients (30%). Then medial meniscal (MM) tears in 25(25.0%) patients, followed by lateral collateral ligament (LCL) injury in 11(11.0%) patients, lateral meniscus (LM) injury in 9(9.0%) patients, medial collateral ligament (MCL) injury in 9(9.0%) patients, osteochondral lesion in 4(4.0%) patients, popliteal injury in 3(3.0%) patients, posterior cruciate ligament (PCL) injury in 3(3.0%) patients, patellar fractures in 2(2.0%) patients. No significant MRI findings were observed in 4(4.0%) cases. Madurwar et al[16] and Baviskar et al[17] also found anterior cruciate ligament injury to be the most common injury in their studies which was 76% and 56% respectively.

In this study, occurrence of medial meniscus (MM) injury was than that of lateral meniscus (LM) injury which was 25% and 9% respectively. Umap et al[16] also found that medial meniscus (MM) injury occurred more frequently than lateral meniscus (LM) injury which was 38.0% and 26% respectively.

In this study, posterior cruciate ligament (PCL) is less commonly injured ligament then anterior cruciate ligament (ACL). According to our study, only 3% cases had PCL injury which is similar to the findings of Jatinder et al[18] and Shetty et al[19]. They found PCL injury 5% and 4.4% cases respectively in their studies. Again, lateral collateral ligament (LCL) is more commonly injured than medial collateral ligament (MCL), frequency of which are 11% and 9% respectively in this study. This findings are also similar to the study of Umap et al[15] which found the frequency of LCL and MCL injury to be 17% and 6% respectively[15]. In this study, patellar fracture was found in two patients 2% whereas study by Ikhlas et al[14] found it to be 11.8% out of 85 patients[14]. Popliteal tendon injury was found in 2% cases in this study which is same as found in the study done by Umap et al[15].

In this study, sports related injury was found in 73% patients and non-sports related injury was found in 27% cases. Similar results were found in study by Frobell et al[20] where only 25% of patients had non-sports injury and 75% injury was related to sports.

MRI represents the optimal imaging tool in the evaluation of the sports-related knee injuries, it is an accurate method of diagnosing meniscaus, ligament, cartilage and muscles of the injured knee[21]. The MRI interpretation of the most frequently encountered types of traumatic knee abnormalities were discussed in this study in relation with physical activity and age.

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

Conclusion

After initial radiograph X-ray, often further evaluation is needed to know the different types of injury in post-traumatic knee in suspicious cases. Accurate diagnosis of type of injury is very much required for better treatment of post traumatic knee. Due to multiplanar imaging capabilities and excellent soft tissue contrast resolution and noninvasive analysis criteria, magnetic resonance imaging is very much essential for detail evaluation of various types of injuries of post traumatic knee. Further studies should be conducted involving a large sample size in multiple centers.

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Conflict of interest
None declared.
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Authors' Contributions
Lt Col Mohammed Mominul Hoque Sarker and Towhida Khan conceived and designed the study, analyzed the data, interpreted the results and wrote up the draft manuscript. Major Maswood Sarker involved in the manuscript review and editing. All authors read and approved the final manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

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References

1. Kulowski J. Flexion Contracture of the Knee: The Mechanics of the Muscular Contracture and the Turnbuckle Cast Method of Treatment; with a Review of Fifty-Five Cases. JBJS. 1932 Jul 1;14(3):618-30
2. Lensing AW, Prandoni P, Prins MH, Büller HR. Deep-vein thrombosis. The Lancet. 1999;353(9151):479-85
3. Saeed IO. MRI evaluation for post-traumatic knee joint injuries. J. Nurs. Health Sci. 2018;7:48-51
4. Matherne TH, Monu JU, Schruff L, Neitzschman HR. Avulsions around the knee portend instability. Emergency Radiology. 2005;11:213-8
5. Gillquist, K. Messner Anterior cruciate ligament reconstruction and the

long-term incidence of gonarthrosis Sports Med, 27 (1999),pp. 143-156
6. M. Englund, E.M. Roos, L.S. Lohmander Impact of type of meniscal tear on radiographic and symptomatic knee osteoarthritis: a sixteen-year follow up of meniscectomy with matched controls Arthritis Rheum, 48 (2003), pp. 2178-2187
7. Gordon MD, Steiner ME.. Anterior cruciate ligament injuries. In: Orthopaedic Knowledge Update Sports Medicine III, Garrick JG (Ed), American Academy of Orthopaedic Surgeons, Rosemont 2004. p.169.
8. Albright JC, Carpenter JE, Graf BK, et al.. Knee and leg: soft tissue trauma. In: Orthopaedic Knowledge Update 6, Beaty JH (Ed), American Academy of Orthopaedic Surgeons, Rosemont 1999. p.533.
9. Friel NA, Chu CR. The role of ACL injury in the development of posttraumatic knee osteoarthritis. Clin Sports Med. 2013 Jan;32(1):1-12. doi: 10.1016/j.csm.2012.08.017. PMID: 23177457; PMCID: PMC6548436.
10. Sonin AH, Fitzgerald SW, Friedman H: MR Imaging of Posterior Cruciate Ligament; Normal, Abnormal and associated injury pattern. Radiographics. 1995; 15:551–61. PMid: 7624562. https://doi.org/10.1148/radiographics.15.3.7624562
11. B K. Harrison, B. E. Abell, and T. W. Gibson, "The thessaly test for detection of meniscal tears: validation of a new physical examination technique for primary care medicine," Clinical Journal of Sport Medicine, vol. 19, no. 1, pp. 9–12, 2009
12. D. A. Rubin and G. A. Paletta Jr., "Current concepts and controversies in meniscal imaging," Magnetic Resonance Imaging Clinics of North America, vol. 8, no. 2, pp. 243–270, 2000
13. Rajesh Umap, Bijpuriya Anurag, Sachin Bagale, Navid Shattari. Evaluation of traumatic knee joint injuries with MRI. International Journal of Contemporary Medicine Surgery and Radiology. 2018;3(3):C77-C81
14. Schweitzer ME, Tran D, Deely DM, Hume EL. Medial Collateral Ligament injuries: Evaluation of multiple signs, prevalence and location of associated bone bruises and assessment with MR Imaging. Radiology. 1995 Mar 1; 194(3):825–9. PMid: 7862987. https://doi.org/10.1148/ radiology.194.3.7862987
15. Ikhlas O. Saeed. "MRI Evaluation For Post-Traumatic Knee Joint Injuries". IOSR Journal of Nursing and Health Science (IOSR-JNHS) , vol. 7, no.2, 2018, pp. 48-51
16. Rajesh Umap, BijpuriyaAnurag, SachinBagale, NavidShattari. Evaluation of traumatic knee joint injuries with MRI. International Journal of Contemporary Medicine Surgery and Radiology. 2018;3(3):C77-C81
17. Madurwar AU, Ramya M, Kumar S et al. Evaluation of role of MRI in knee joint injuries in correlation with arthroscopy. International Journal of Research and Review. 2017; 4(7):40-46
18. Sumit Baviskar, Nilesh Chaudhari , Ajit Patil , Priti Komatwar, Akshit Gangwal , Ashu Dixi and Sujay Saxena ,MVP Journal of Medical Sciences, Vol 9(1), 51-56, January-June 2022.
19. J.P. S, L. G, R. S, V. S, V. G. MR imaging of knee with arthroscopic correlation in twisting injuries. Indian J Radiol Imaging. 2004;14(1):33–40.
20. Shetty, Lakhkar B, Krishna G. Magnetic resonance imaging in pathologic 138 conditions of knee. Indian J Radiol Imaging. 2002;12(3):375
21. Frobell RB, Lohmander LS, Roos HP. Acute rotational trauma to the knee: poor agreement between clinical assessment and magnetic resonance imaging findings. Scandinavian journal of medicine & science in sports. 2007 Apr;17(2):109-14
22. Hetta W., Niazi G. MRI in assessment of sports related knee injuries. Egyptian Journal of Radiology and Nuclear Medicine, Volume 45, Issue 4, December 2014
Analg 1973;52(6):989-96
24. Dalens B, Vanneuville G, Tanguy A. Comparison of the fascia iliaca compartment block with the 3-in-1 block in children. Anesth Analg 1989;69:705-13.
25. Desborough JP. The stress response to trauma and surgery. Br J Anaesth 2000;85(1):109-17

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Perception and Practice of Personal Protective Equipment's among Nurses in a Tertiary Level Hospital

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Abstract

Background: Nursing staff play a vital role in health care delivery and constitute an integral part of Health Care workers (HCW) in any healthcare setting. In their daily activities, they are exposed to blood and body fluids with the risk of spread of various blood-borne pathogens. Effective use of PPE includes properly removing and disposing of contaminated PPE to prevent exposing both the wearer and other people to infection. **Objective:** This study was conducted to assess the level of perception and practices on personal protective equipment's among nurses in a tertiary level hospital. **Methodology:** This cross sectional study was conducted purposively selected 340 nurses in Mymensingh Medical College Hospital, from1st January to 31st December, 2021. Data were collected through face to face interview by using Semi-structured self-administered questionnaire and an observational check list was used. **Results:** The results showed that out of 340 respondents 324(95.3%) used personal protective equipment during handle with infectious patient. Here, 70.20% respondents had good perception about personal protective equipment's, and 29.80% had poor perception about PPEs and 19.80% respondents had performed good practice about personal protective equipment's, 33.1% performed fair practice and 47.1% had performed poor practice. **Conclusion:** There should be necessary to develop of health safety policies, regular training on personal protective equipment's, provision of personal protective equipment's and changing health care attitude to ensure safety first. *[Journal of Army Medical College Jashore, July, 2023;4(2):82-86]*

Keywords: Infection Prevention; Personal protective equipment; Donning; Doffing; Practice regarding Infection control

Introduction

Personal protective equipment - known as 'PPE' - is used to protect health care workers while performing specific tasks that might involve them coming into contact with blood or body fluids that may contain some infectious agents (germs). It refers to protective clothing, helmets, gloves, face shields, goggles, facemasks and/or respirators or other equipment designed to protect the wearer from injury or the spread of infection or illness. PPE helps prevent the spread of germs in the hospital and anywhere. This can protect people and health care workers from infections.

All hospital staff, patients, and visitors should use PPE when there will be contact with blood or other bodily fluids. Over 59 million people are employed in the healthcare sector worldwide[1]. In epidemics of highly infectious diseases, such as Ebola Virus Disease (EVD) or Severe Acute Respiratory Syndrome (SARS), healthcare workers (HCW) are at much greater risk of infection than the general population, due to their contact with patients' contaminated body fluids. Healthcare workers could also be at risk when seeing patients arriving from the epidemic areas. Due to the high risk of infection and the high fatality rate, hundreds of HCW died in the epidemic areas[2].

The nurses have a key role to ensure that infection control procedure and practice in order to prevent patients from acquiring an infection and to protect health care staff from health care-associated infection (HCAI). US research says nurse staffing may have more impact than greater infection control measures[3]. Contact precautions by means of personal protective equipment (PPE) can reduce the risk of Nurse's work in hospital[4]. PPE is commonly used in health care settings such as hospitals, doctor's offices and clinical labs. When used properly, PPE acts as a barrier between

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infectious materials such as viral and bacterial contaminants and skin, mouth, nose, or eyes[5]. When used properly and with other infection control practices such as hand-washing, using alcohol-based hand sanitizers, and covering coughs and sneezes, it minimizes the spread of infection from one person to another. Effective use of PPE includes properly removing and disposing of contaminated PPE to prevent exposing both the wearer and other people to infection. Health care providers and receivers are at high risk to be exposed to potentially contaminated blood and body fluids that can cause to serious or even lethal infections[6]. Nurses in particular are recurrently exposed to various infections during the serving their nursing activities[7]. This can be minimized by applying standard precautions as hand hygiene, use of personal protective equipment like gloves, gowns, masks, safe injection practices, safe handling of potentially contaminated equipment or surfaces in the patient environment, and respiratory hygiene/ cough etiquette which are designed to minimize the risk of getting occupational infection from both known and unknown sources in the healthcare setting[8].

Every working day, over 59 million healthcare workers (HCW) in the world run the risk of getting infected with hepatitis, AIDS, or tuberculosis by accidental exposure to patient's blood and other bodily fluids[9-11]. This global issue is even more pronounced in developing countries, where the risk is underappreciated, overlooked, and poorly prevented. Thus, education about infection prevention and control was targeted as one of the main objectives of the infection control programs especially where nurses represent the largest group of workers within the healthcare system[12-13].

Nursing staff play a vital role in health care delivery and constitute an integral part of Health Care workers (HCW) in any healthcare setting. In their daily activities, they are exposed to blood and body fluids with the risk of spread of various blood-borne pathogens. And it is well known that some issues played barrier role to implement standard precaution include lack of understanding and knowledge among health care workers on how to properly use protective barriers, lack of time, lack of resources, and lack of proper training. Therefore, the present study was aimed to reveal to assess the level of perception and practice on personal protective equipment's among nurses in a tertiary hospital.

Methodology

Study Settings and Population: This descriptive cross sectional study had been undertaken with the objective to assess the level of perception and practices on personal protective equipment's among nurses in a tertiary level hospital. The study was conducted in Mymensingh Medical College Hospital, Mymensingh from1st January 2021 to 31st December 2021 and purposively selected nurses of Mymensingh Medical College Hospital, Mymensingh, Bangladesh were study sample.

Study Procedure: Data were collected through face to face interview by using Semi-structured self-administered questionnaire and an observational check list was developed by using selected variables according to objectives. Socio-Demographic characteristics of the respondents like age, Gender, Level of education, length of service, special training, variable regarding perception ppe of the respondents like infection control, recommended guideline for wearing PPE, hand hygiene, donning and doffing management of disposal of PPE and variable regarding practices PPE of the respondents like Hand wash, uses of PPE, Advices for maintain PPE, maintaining proper use of PPE, Red box, proper mainlining of dinning and doffing

Statistical Analysis: Collected data were processed and analyzed with the help of SPSS (Statistical Package of Social Science) version 25. Descriptive statistics includes frequency, percentage, mean and Standard deviation. Inferential statistic was applied.

Ethical Consideration: Permission of concerned authority of the hospital was taken. Objectives of the study explained in brief to the respondents. Informed consent taken from each and every respondent before collection of data. Privacy and confidentiality was ensured and maintained strictly. Respondents have the right to withdraw themselves from the study any time during data collection period. They assured that there would be no physical and mental harm to them during the study as there is no invasive procedure applied.

Results

This resulted in a response rate of 100.0% cases.

Table 1: Socio-Demographic characteristics of the respondents (n=340)

Age Group	Frequency	Percent
• Below 25 years	7	2.1
• 25 to 35 Years	225	66.2
• 36 to 45 Years	55	16.2
• 46 to 55 Years	47	13.8
• Above 55 years	6	1.8
Mean (±SD) = 33.96 (±9.064)		
Gender		
• Female	302	88.8
• Male	38	11.2
Level of education		
• Diploma in nursing	240	70.6
• Bachelor degree in nursing	72	21.2
• Master degree in nursing	26	7.6
• PhD in nursing	2	0.6
Length of service		
• <5 years	222	65.3
• 6-10 years	42	12.4
• 11-15 years	9	2.6
• 16-20 years	21	6.2
• >20 years	46	13.5
Special training		
• Yes	97	28.5
• No	243	71.5

Table 2: Perception regarding PPEs of the respondents (n=340)

Know about infection control	Frequency	Percent
Yes	340	100.0
Know about Personal Protective Equipment (PPE)		
Yes	339	99.7
No	1	0.3
Use all personal protective equipment for infection control		
Yes	208	61.2
No	132	38.8
Know about the recommended guideline for wearing PPE		
Yes	223	65.6
No	117	34.4
Hand hygiene is very important for prevent infection		
Yes	340	100.0
Separated place is need for donning and doffing		
Yes	338	99.4
No	2	0.6
Correct management & disposal of PPE is important		
Yes	339	99.7
No	1	0.3

Table 1 shows the mean age of the respondents was 33.96±9.064 years. The majority number 225(66.2%) of the respondents belonged to 25-35 years of age with 302 (88.8%) female and rest of them 38 (11.2%) were male. More than half 240 (70.6%) of the respondents' level of education were Diploma in nursing, 72 (21.2%) were Bachelor degree in nursing, 26 (7.6%) were Master degree in nursing and only 2 (.6%) respondents were PhD in nursing from them majority 222 (65.3%) respondents' length of service was less than 5 years, and only 97(28.5%) respondents attended special training.

Table 2 shows all of the respondents 340(100%) had knowledge about infection control and 339(99.7%) had knowledge about personal protective equipment's. Out of 340 respondents, 208(61.2%) respondents had used all personal protective equipment's and 223(65.6%) respondents knew the recommended guideline for wearing PPE and 117(34.4%) respondent did not know the recommended guideline. All of the respondents 340(100%) had clear concept about the importance of hand hygiene for infection prevention from them, 338(99.4%) were thinking about the

Table 3: Practices regarding PPEs of the respondents (n=340)

Hand hygiene as the most effective method to prevent infection	Frequency	Percent
Yes	294	86.5
No	46	13.5
Wash hand with soap and water to maintain hand hygiene		
Yes	340	100.0
Use of personal protective equipment (PPE) and hand hygiene together as the methods of infection prevention		
Yes	322	94.7
No	18	5.
Use personal protective equipment during handle with infectious patient		
Yes	324	95.3
No	16	4.7
Worn Gloves, Gown, Goggles, N95 mask during the treatment of an asymptomatic patient with a history of exposure to infectious disease		
Yes	252	74.1
No	88	25.9
Use mask during contact with Infected person and non-infected person		
Yes	288	84.7
No	52	15.3
Advice the infected and non-infected person to wear mask		
Yes	323	95.0
No	17	5.0
Maintain the correct steps of donning (putting on)		
Yes	294	86.5
No	46	13.5
Maintain the correct steps of doffing (putting off)		
Yes	277	81.5
No	63	18.5
Use Red box to discard PPEs are in your ward		
Yes	213	62.6
No	127	37.4

necessary of separate place for donning and doffing and about all of the respondents 339(99.7%) had knowledge about the importance of correct management and disposal of PPE except 1(.3%) respondents.

Table 3 shows most of the respondents 294(86.5%) said that they maintained hand hygiene as the most effective method to prevent infection and 46(13.5%) respondents said they followed other method to prevent infection. All of the respondents 340(100%) washed hand with soap and water to maintain hand hygiene, 322(94.7%) of the respondents used personal protective equipment and maintain hand hygiene together as the methods of infection prevention and 324(95.3%) used personal protective equipment during handle with infectious patient. Among 340 respondents 252(74.1%) worn gloves, gown, goggles and N95 mask during the treatment of an asymptomatic patient with a history of exposure to infectious and 288(84.7%) used mask during contact with infected and non-infected person. Majority of the respondents 323(95%) advised the patients to wear mask both infected and non-infected and only 17(5%) did not give advice to wear mask, 294(86.5%) respondents maintained the correct steps of donning and 46(13.5%) respondents did not follow the correct steps of donning and 277(81.5%) maintained the steps of doffing and 63(18.5%) did not continue the steps of doffing and 213(62.6%) used red color box to discard PPEs in their ward and 127(37.4%) respondents did not used red color box.

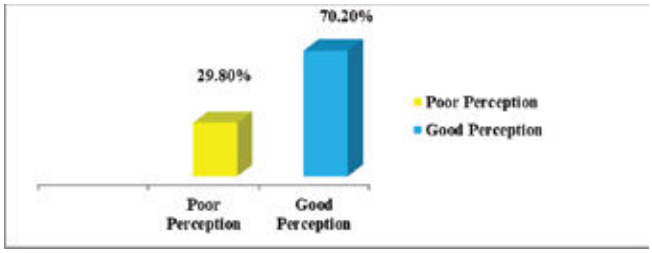

Figure I: Distribution of the respondents according to level of Perception regarding PPEs (n=340)

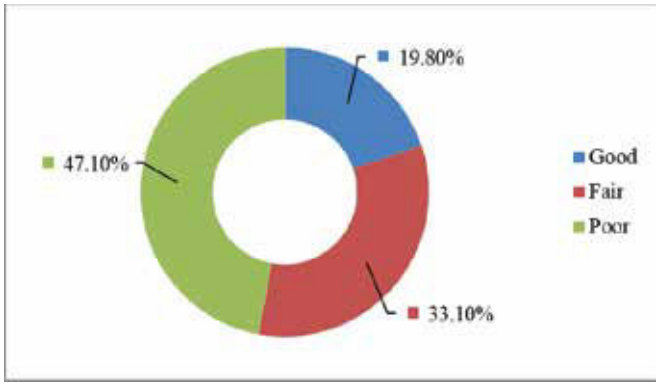

Figure II: Distribution of the respondents according to level of practices regarding PPEs (n=340)

Figure I reveals,70.20% respondents had good perception about personal protective equipment's, and 29.80%had poor perception about PPEs.

Figure II reveals, 19.80%respondents had performed good practice about personal protective equipment's, 33.1%performedfair practice and 47.1%hadperformedpoor practice.

Discussion

This study revealed that among 340 respondents, all of the respondents 340(100%) had knowledge about infection control,339(99.7%) had knowledge about personal protective equipment's except only 1(.3%) had not knowledge about PPEs. Out of 340 respondents, 208(61.2%) respondents had used all personal protective equipment's and 132(38.8%) respondents had not used all type of personal protective equipment's.

This study shows, among 340 respondents, most of the respondents 335(98.5%) had knowledge about the necessary of hand hygiene before donning of PPE and only 5(1.5%) respondents had not idea about this. Most of the respondents 335(98.5%) had idea about the necessary of hand hygiene before doffing of PPE and 5(1.5%) cases had no idea about this. Another study11 explores that, routine use of disposable gloves has been recommended for all patient contacts. Gloves require hand hygiene before wearing and are removed after seeing a patient and the hands washed thoroughly before re-gloving to see a new patient. In this study nurses showed satisfactory knowledge 86.0% on this regard, this finding was in concordance with a study reported that compliance with hand hygiene performance is high, but was not in concordance with three studies who reported that compliance with hand hygiene performance is low[14].

In this study reveals that out of 340 respondents 324(95.3%) cases used personal protective equipment during handle with infectious patient and rest of the respondents 16(4.7%) cases did not use PPE during handle with infectious patient. Here, 70.20% respondents had good perception about personal protective equipment's, and 29.80% had poor perception about PPEs and 19.80% respondents had performed good practice about personal protective equipment's, 33.1% performed fair practice and 47.1% had performed poor practice.

This cross sectional study (n=216) was used in which the workers employed in the three sections had high level of knowledge of the health problems, but the knowledge of personal protective equipment differed by section. The study result shows that more than half of the workers in all the sections were aware of the benefits of Personal Protective Equipment (PPE), but a few workers in the cutting section were using Personal Protective Equipment (PPE). The result of the study also shows that there was a wide gap between their knowledge level and practice with protective devices. The result of the study also shows that there was a wide gap

between their knowledge level and practice with protective devices[15].

There is some limitation of this study. The sample size was small, this study as such as it may not reflect the prevailing, situation of the country as a whole. i.e. this finding did not represent all over the country.

Conclusion

Appropriate use of PPE is vital in protecting the health care workers and spread of infection. There should be necessary to develop of health safety policies, regular training on personal protective equipment's, provision of personal protective equipment's and changing health care attitude to ensure safety first. It is high time to ensure availability of all facilities and equipment's required for applying infection control standard precautions and an effective infection control team in the hospital. It is also necessary to continuous monitoring of nurses' practices parallel with providing adequate resources to decrease of Nurses work load by increasing the number of nursing staff.

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Conflict of interest
None declared.
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Authors' Contributions
Mostofa S, Huq ME conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript. Akter EZ, Alam GN involved in the manuscript review and editing. All authors read and approved the final manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

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References

1. Verbeek JH, Rajamaki B, Ijaz S, Sauni R, Toomey E, Blackwood B, Tikka C, Ruotsalainen JH, Balci FS. Personal protective equipment for preventing highly infectious diseases due to exposure to contaminated body fluids in healthcare staff. Cochrane database of systematic reviews. 2020(4)
2. Jamieson DJ, Steinberg JP, Martinello RA, Perl TM, Rasmussen SA. Obstetricians on the coronavirus disease 2019 (COVID-19) front lines and the confusing world of personal protective equipment. Obstetrics and gynecology. 2020 Jun 1
3. Eskander HG, Morsy WY, Elfeky HA. Intensive care nurses' knowledge & practices regarding infection control standard precautions at a selected Egyptian cancer hospital. prevention. 2013;4(19):160-74.
4. Abukhelaif AE. Personal protective equipment knowledge and practices among nurses working at Al-Baha King Fahad Hospital, Saudi Arabia. Archivos De Medicina. 2019;4(1):2
5. Twitchell KT, Wachs JE. Bloodborne Pathogens: What you Need to Know—Part II. AAOHN Journal. 2003 Feb;51(2):89-97
6. Kosgeroglu N, Ayranci U, Vardareli E, Dincer S. Occupational exposure to hepatitis infection among Turkish nurses: frequency of needle exposure, sharps injuries and vaccination. Epidemiology & Infection. 2004 Feb;132(1):27-33
7. Siegel JD, Rhinehart E, Jackson M, Chiarello L. 2007 guideline for isolation precautions: preventing transmission of infectious agents in health care settings. American journal of infection control. 2007;35(10):S65-164.
8. World Health Organization (WHO). Occupational health. Health workers [displayed 28 May 2017]. Available at http://www.who.int/occupational_health/topics/hcworkers/en/
9. Maltezou HC, Maragos A, Raftopoulos V, Karageorgou K, Halharapi T, Remoudaki H, Papadimitriou T, Pierroutsakos IN. Strategies to increase influenza vaccine uptake among health care workers in Greece. Scandinavian journal of infectious diseases. 2008;40(3):266-8
10. Royal College of Nursing. Essential practice for infection prevention and control: guidance for nursing staff. RCN; 2012
11. Rasslan O. Infection prevention and control education in EGYPT: Professional Diploma in Infection Control (PDIC). International Journal of infection control. 2011;7(2)
12. World Health Organization (WHO). Hepatitis B. 2008. [Cited 15 Dec 2009.] Available from URL: http://www.who.int/mediacentre/factsheets/fs204/en/
13. Asare A, Enweronu-Laryea CC, Newman MJ. Hand hygiene practices in a neonatal intensive care unit in Ghana. The Journal of Infection in Developing Countries. 2009;3(05):352-6
14. Parimalam P, Kamalamma N, Ganguli AK. Knowledge, attitude and practices related to occupational health problems among garment workers in Tamil Nadu, India. Journal of occupational health. 2007;49(6):528-34