KuMCJ

Kushtia Medical College Journal

Volume 6 **Number 1** **June 2022**

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KUSHTIA MEDICAL COLLEGE JOURNAL (KuMCJ)

Vol. 6, No. 1, June 2022

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KUSHTIA MEDICAL COLLEGE JOURNAL
Volume 6, Number 1, June 2022

Published By
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Behavior Change Communication (BCC): Importance and Strategies

Behavior Change Communication (BCC) is a communication strategy that encourages an individual or a community to promote changes in knowledge, attitudes, norms, believes and behaviors. BCC is a powerful and fundamental human interaction – communication, that positively influences dimensions of health and well-being.[1] Attitudes, on the other hand, are specific to particular behaviors. While attitudes can influence behavior, evidences now suggest that the link is not as strong as we might have thought previously.[2] BCC is an interactive process with communities (as integrated with an overall program) to develop tailored messages and approaches using a variety of communication channels to develop positive behaviors; promote and sustain individual, community and societal behavior change; and maintain appropriate behaviors.[3] WHO report on "Why health communication is important in public health" states that many of the threats to global public health (through diseases and environmental calamities) are rooted in human behaviour. Communication serves an instrumental role that helps one acquire knowledge as well as also fulfilling ritualistic function, one that reflects humans as members of a social community.[4]

BCC messages should be (1) Research centered, (2) Client centered (3) Benefit for Learning (4) Service Interrelated (5) Professionally developed and interrelated to behavior change

Importance of BCC:[3] Majority of researchers of health communication insist on behavior change programs that aims at (1) Increase in knowledge and attitude of the people. (2) BCC helps to trigger and stimulate people for adopting positive behavioral approaches. (3) BCC promotes appropriate and essential attitude change. (4) It reduces stigma and discrimination. (5) As BCC strategies and messages are tailored for specific target groups, these strategies are efficient and effective. (6) BCC approaches are more sustainable and acceptable. (7) BCC helps to increase learning and skills. (8) It improves aptitudes and feeling of self-adequacy.

Scutchfield & Keck[5] states that the success of communication is determined by a variety of factors that may include: how much access the target audience has to information and whether the target audience has acquired sufficient knowledge and skills to perform the behavior among others.

Apart from these, importance of BCC at different levels is:[6]

1. At individual-level: BCC helps in learning, mindfulness, convictions, and sentiments about wellbeing practices. It plays a significant role in deciding wellbeing conduct.

2. At community-level: BCC approach stimulates community to take ownership towards the approach. Additionally, it will also help the community to replicate the positive practices in bigger level.

3. At national level: BCC will play a significant role in lobbying & advocacy of certain practices. These approaches will support and encourage government and other stakeholders to bring a positive whim among all the citizens for adopting positive behavioral practices.

The guiding principles of BCC are:[3] (1) BCC should be integrated with the goal and objective of the program (2) Formative BCC assessments must be carried out while developing BCC messages (3) Target population must participate during BCC development (4) Key and direct stakeholders need to be involved from the design stage of BCC (5) Pre-testing must be done for effective BCC materials (6) BCC programs must involve planning for monitoring and evaluation. (7) BCC strategies must be positive and action oriented.

Strategies while developing BCC messages include:[3]

1. Analysis - (a) Comprehend the idea of the issues and hindrances to change. (b) Tune in to a potential group of spectators, survey existing project approaches, assets, qualities, and shortcomings and investigate correspondence assets.

2. Strategic Design - (a) Settle on destinations, recognize crowd portions, position the idea for the group of spectators (b) Explain the conduct change model to be utilized, select channels of correspondence, plan for relational discourse, draw up an activity plan, and structure for assessment.

3. Development, Pretesting, Revision, and Production - (a) Create message ideas, pretest with a group of spectator's individuals and guards. (b) Amend and produce messages/materials and pretest new and existing materials.

4. The executives, implementation, and monitoring - (a) Implement the BCC and carry out continuous monitoring to see the positive and negative effects. (b) Conduct critical analysis of the approach. (c) Make sure that the messages coherent with the objective of the BCC.

5. Making arrangements for continuity - (a) Acclimate to changing conditions and plan for progression and independence.

The information, education and communication **(**IEC) are an important aspect in health communication especially behavior change. IEC is a public health approach aiming at changing or reinforcing health-related behaviors in a target audience, concerning a specific problem and within a pre-defined period of time, through communication methods and principles.[7] IEC is used to stimulate community dialogue, remove myths, misconceptions, and taboos, reduce stigma and discrimination, create demand for information and services, help people cope with difficult situations, breaks sensitive news, motivate people to change, adopt, and maintain more healthful practices etc. [8]

BCC Strategies in Health are: (1) User identification (2) Community Mobilization: Mass media for making mindfulness for national projects like adolescent wellbeing, MCH wellbeing administrations, and so forth. (3) Platform: Home visits, gatherings. (4) Target population: Identify the key target population of the message. (5) Advancement of healthy behavior messages: MCH, Nutrition, Contraception, Adolescents, Health, Hygiene, Sanitation, Epidemics, and so on.

Limitations of BCC:[2]

a) Material-focused as opposed to conducting focused:

In most of the cases, BCC approaches are considered as 'material-focused' rather than 'conduct focused'. This implies the greater part of the consideration; time and assets go into the generation of materials, (for example, handouts). In any case, while alluring materials may grab somebody's eye, they do not without anyone else persuade individuals to change conduct.

b) Addressing too many behaviours and audiences at a time:

Many of formative research studies were designed to look at multiple behaviours and determinants across several audiences. As a result, the studies lacked sufficient focus and findings were often not sufficiently in-depth to be useful for designing effective BCC campaigns.

c) Limited capacity within local line agencies:

Local agencies and organizations might not have enough skills and ability to develop triggering BCC messages. There may be limited abled human resource to facilitate the process of effective BCC message generation. BCC messages if not prepared without having proper idea about the context of the target population might be useless and go in vain.

Conclusion:

BCC is an essential component of development. However, society-wide change is slow. Behavior change cannot happen overnight due to interpersonal or environmental factors surrounding people. Behavior change is a process that must permit willingness of the affected person to change behavior. Physical stimuli rational stimuli, emotional stimuli, skills, family and personal networks and social structures are some of the factors that can prompt people to change their behavior. It is a strategy that triggers people/society/communities to adopt healthy, beneficial and positive behavioral practices.

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ORIGINAL ARTICLE

Complications of parotid surgery – A study of 42 cases in a tertiary level hospital

Rahman MM[1], Haque ME[2], Alam MNK[3], Hanif M[4]

Abstract

Background: Parotid surgery without branch of facial nerve dissection is a technically difficult procedure. Parotidectomy involves well-documented post-operative problems, even in the hands of skilled surgeons. Aim of this study was to determine the most prevalent complications those can occur during parotid surgery.
Methods: This cross-sectional study on 42 cases was carried out at the Department of Ear, Nose and Throat (ENT) in Kushtia Medical College Hospital, Kushtia, Jessore Medical College Hospital and National Institute of ENT, Tejgoan from September 2020 to September 2021. Total 42 FNAC proved patients, benign and malignant disease, involving parotid gland of all age and both sexes were included in this study by purposive sampling technique. Parotid swelling with facial nerve palsy excluded from this study.
Results: Most common complication was found facial palsy; among them 10(26.3%) patients in superficial parotidectomy and 2(50.0%) in total conservative parotidectomy. Most at risk for injury during parotidectomy is marginal mandibular nerve.
Conclusion: In this study, facial nerve palsy was the most common consequence following parotid surgery. During parotidectomy, surgeons must pay close attention to reduce the risk of complications.
Keyword: Parotid surgery, complications, facial nerve palsy.

KuMCJ, June 2022; Vol.6 (1): 3-6

Introduction

Parotid surgery without dissection of branches of facial nerve is a technically challenging surgery. Even in experienced hands, parotidectomy has well-documented post-operative complications.[1]

Today the widely accepted procedures for benign parotid gland tumours are superficial parotidectomy and extra capsular resection while for malignant disorders range from total to extended parotidectomy.[2] Pleomorphic adenoma lack a true capsule and have small protrusions, pseudopodia, that extend beyond the central tumor mass. The main reason for recurrence is incomplete surgical resection[3] rupture of the capsule of a parotid tumour.[4,5]

Conventional treatment for pleomorphic adenoma located in the superficial lobe of the parotid gland consists of a formal superficial parotidectomy to remove the tumor with a clear margin preserving the facial nerve. The elimination of the superficial lobe ensures a very low incidence of tumor recurrence, but it can cause a number of major and minor complications due to the dissection of the facial nerve and the loss of at least three quarters of the parotid gland volume.[6]

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Patients undergoing superficial parotidectomy for benign parotid lesions are at risk of postoperative complications, most notably cosmetic complications such as facial paralysis and contour defects and functional complications including Frey's syndrome. Traditionally, surgical drains have been placed at the end of surgery to prevent hematoma and sialocele formation. However, this can increase the risk of postoperative complications and contribute to a prolonged course in hospital.[7]

Parotidectomy (such as facial nerve weakness, salivary fistula, and Frey's syndrome) contains information on specific side effects; However, there is a lack of information on common postoperative surgical illnesses after parotidectomy.[8] The goal of our research is to provide a reference to parotidectomy surgery and to evaluate general complications and operative outcomes after parotid surgery.

Methods

This cross-sectional study on 42 cases was carried out at the Department of Ear, Nose and Throat (ENT) in Kushtia Medical College Hospital. Kushtia, Jessore Medical College Hospital, Jessore and National Institute of ENT, Dhaka from September 2020 to September 2021. Total 42 patients randomly selected and convenient, purposive type of sampling technique was followed in this study. FNAC proved benign and malignant disease involving parotid gland of all age and both sexes were included in this study. Parotid swelling with facial nerve palsy was excluded from this study. All cases were diagnosed preoperatively by Fine Needle Aspiration Cytology (FNAC) and confirmed by postoperative histopathology report. Patients with preoperative facial nerve palsy were excluded from this study. All cases were explained about the procedure and with due consent case selection, follow up, investigating patients, data sheet filling up, maintenance of all records, data checking, data entry, analysis and report writing were done by investigator themselves. Patients were followed up for six months and postoperative complications were evaluated.

Results

The average age was 43.1±13.4 years, with a range of 19 to 66 years. The majority of patients (69.0%) were between the ages of 31 and 50, with 26 (61.9%) being males, 24 (57.1%) being right side tumors, 22 (52.4%) having tumors larger than 2 cm, and 36 (85.7%) being benign tumors (Table-1). The majority of patients (90.5%) had a superficial parotidectomy, while 4 (9.5%) had a thorough conservative parotidectomy (Table-2). The most prevalent event was facial palsy, which occurred in 10 (26.3%) of superficial parotidectomy patients and 2 (50.0%) of total conservative parotidectomy patients (Table-3). The marginal mandibular nerve is the most vulnerable to injury during parotidectomy (Table- 4).

Table 1: Demographic and clinical characteristics of the patients (n=42)

	Frequency	Percentage
Age (years): Mean±SD=43.1±13.5		
≤30	9	21.4
31-50	29	69.0
>50	4	9.5
Sex		
Male	26	61.9
Female	16	38.1
Side of tumor		
Right	24	57.1
Left	18	42.9
Size of tumor (cm)		
≤2	20	47.6
>2	22	52.4
Type of tumor		
Malignant	6	14.3
Benign	36	85.7

Table 2: Type of surgery of the patients (n=42)

Type of surgery	Frequency	Percentage
Superficial parotidectomy	38	90.5
Total conservative parotidectomy	4	9.5

Table 3: Complications of surgery of the patients (n=42)

Complications of surgery	Superficial parotidectomy (n=38)	Total conservative parotidectomy (n=4)
Facial palsy	10 (26.3%)	2 (50.0%)
Temporary	9 (23.7%)	1 (25.0%)
Permanent	1 (2.6%)	1 (25.0%)
Frey's syndrome	5 (13.2%)	1 (25.0%)
Hypoesthesia of great auricular nerve	8 (21.1%)	1 (25.0%)
Heamatoma	0 (0.0%)	1 (25.0%)

Table 4: Branches of facial nerve injured during parotid surgery (n=12)

Types of injury	Branches	Frequency	Percentage
Single branch	Zygomatic	1	8.3
	Mandibular	10	83.3
Multiple branch	Lower trunk (cervicofacial)	1	8.3

Discussion

In this study observed the mean age was found 43.1±13.4 years with range from 19 to 66 years. Majority (69.0%) patients belonged to age 31-50 years, 26(61.9%) were males, 24(57.1%) were right side tumor, 22(52.4%) were tumor size>2 cm and 36(85.7%) were benign tumor. Infante-Cossio et al.[6] reported they included 79 patients in the study, 39 men (49.4%) and 40 women (50.6%), with a mean age of 48 years (range 24-81 years).65.8% of tumors were located on the right side and mean tumor size was 2.44 cm (range 1-6 cm). Zedan et al.[1] observe the mean age of the patients was 42.96 (range 17-84) years. Male was found 57.3% and 78.4% patients had benign tumors. Biswas et al.[9] also observed the age of the study subject range from 14 to 65 years, mean age was 44.1. Twenty five (83.33%) cases were benign & 5(16.67%) cases were malignant. Of these almost 80% are benign and 80% of benign tumors are pleomorphic ademonas & 80% arise from the superficial lobe of the parotid.[10] Atikuzzaman et al.[11] reported median age was found 39.5 years. Male were found in 48 cases and 27 were right site tumour. In this study 56 cases were benign and 4 cases were malignant.

In this study showed the majority (90.5%) patients were found in superficial parotidectomy and 4(9.5%) in total conservative parotidectomy. Atikuzzaman et al.[11] reported superficial parotidectomy was done in 52(86.67%) patients and total conservative parotidectomy was done in 8(13.33%) patients. Zedan et al.[1] superficial parotidectomy was the most common surgery 40.4%, performed followed by total parotidectomy 25.3%, partial superficial parotidectomy 16.3%, radical parotidectomy 1.1%, extended radical parotidectomy 2.2%, revision total parotidectomy for recurrence 6.7%, and parotidectomy with modified radical neck dissection (MRND) 7.9%. Biswas et al.[9] observed superficial parotidectomy was performed in 25 cases and total conservative parotidectomy was performed in 5 cases.

Present study observed that the most common complication was found facial palsy among them 10(26.3%) patients in superficial parotidectomy and 2(50.0%) in total conservative parotidectomy. Infante-Cossio et al.[6] reported the posterior branch of the GAN was preserved in 41 patients (51.9%). 67 patients (84.9%) exhibited a reduction in tactile sensitivity in the earlobe or preauricular skin at 1 week. 61% of the patients in whom the GAN had been preserved and 45.6% in quartile range=0.25-5.75). Zedan et al.[1] reported the most commonly reported unwanted effect of the operation was transient facial nerve palsy occurred in 21.3%. Rupture of capsule/Recurrence 7.3%, Frey's syndrome 7.3%, gradually improved with time. Hypoesthesia of the cheek or earlobe 20.2% due to scarification of the greater auricular nerve), and was most pronounced in the immediate postoperative period, after which it generally subsided markedly over a period of weeks. Zedan et al.[1] demonstrated total radical parotidectomy & total conservative parotidectomy have significantly higher levels of Transient facial nerve palsy P value = 0.008, total radical parotidectomy & extended radical parotidectomy have significantly higher levels of Permanent facial nerve paralysis ($P < 0.001$). Biswas et al.[9] facial nerve injury is more common in total conservative parotidectomy (60%) then superficial parotidectomy 32%. Temporary facial nerve palsy occurred in 30% cases and permanent facial palsy occurred in 6.66% cases. This result is similar to a published work.[3] Atikuzzaman et al.[11] study temporary paresis

resolved within 6 months. Temporary paresis usually resolves, according to Laccourreye, within the 18th post-operative month.[3,12]

In this study observed most at risk for injury during parotidectomy is marginal mandibular nerve. Biswas et al.[9] reported that the branch of the facial nerve most at risk for injury during parotidectomy is marginal mandibular nerve.[13] In this series 20% cases have found in marginal mandibular nerve. Full recovery of facial nerve function occurred between 1 & 6 months after operation.[14]

Conclusion:

In this study, facial nerve palsy was the most common consequence following parotid surgery. During parotidectomy, surgeons must pay close attention to reduce the risk of complications. The wide variety of tumors found, as well as the changes in size and position, as well as the preservation of the facial nerve, make this procedure difficult.

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ORIGINAL ARTICLE

Association between RT-PCR cycle threshold (CT) values for SARS-CoV-2 and severity of COVID-19 disease observed at Kushtia Medical College Hospital, Kushtia, Bangladesh

Islam MN[1], Adhikary A[2], Aftab S[3], Momotaz T[4], Parvez MM[5], Azam NK[6]

Abstract

Background: Cycle threshold (CT) values correspond with viral load in a sample; and, obtained from RT-PCR (real-time polymerase chain reaction) test used for diagnosis of SARS-CoV-2 (severe acute respiratory syndrome corona virus 2) may correspond with severity of COVID-19. Therefore, this study is obtained to find out the association between CT value and severity of COVID-19.
Methods: This descriptive, cross-sectional study was carried out in the Department of Microbiology, Kushtia Medical College, Kushtia with the collaboration of Kushtia Medical College Hospital, Kushtia from 1st January 2021 to 31st December 2021. A total of 120 RT-PCR positive COVID-19 cases were selected by purposive sampling technique. Data were collected with a pre-designed questionnaire and analyzed with the help of SPSS and were presented as frequency, percentages and Chi-square test.
Results: Among 120 RT-PCR positive COVID-19 patients majority shows lower the CT value, higher the viral load and more the severity of the diseases. This represents positive association between cycle threshold values (CT) and severity of COVID-19.
Conclusion: From the findings of the study it appeared that lower the CT value of RT-PCR greater the severity of corona virus diseases.

Keywords: COVID-19, Severity, RT-PCR, CT value.

KuMCJ, June 2022; Vol.6 (1): 7-11

Introduction

Severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) may cause a spectrum of diseases, ranging from asymptomatic to severe life threatening infection.[1] The whole world is still fighting to cope with the corona virus disease 2019 (COVID-19) pandemic. The first step for an accurate diagnosis is to suspect the disease and epidemiologic features clinically and secondly to confirm the diagnosis with viral RNA in the nasopharyngeal and or oropharyngeal swabs by RT-PCR.[2] Therefore, the ability to predict the disease course and follow up of the patients for the appropriate treatment are of great importance for the most suitable management protocol.[2] RT-PCR is the gold standard molecular method for the diagnosis of COVID-19. The number of amplification cycles required for the target gene to exceed a threshold level is the cycle threshold (CT) values.[3] The cycle threshold (Ct) values of the PCR reaction correlate inversely with the viral load; low CT values indicate high viral loads and vice versa.[4] Furthermore, higher viral loads have been seen to correlate with disease

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severity and infectivity.[5,6] We therefore studied the correlation of the CT value of RT-PCR for COVID-19 with severity of disease in patients admitted with COVID-19 at our hospital.

Methods

This descriptive cross-sectional study was conducted at the Department of Microbiology, Kushtia Medical College, Kushtia with the collaboration of Corona Dedicated Unit of Kushtia Medical College Hospital, Kushtia. The Study was carried out from 1st January 2021 to 31st December 2021. All admitted corona patient were included in the study. A total of 120 patients were included in this study by purposive non-random sampling technique. Data were collected through interviewing using pretested interview schedule in a secluded place after obtaining informed verbal consent from the respondents and also from hospital record book. After completion of each interview, questionnaire was checked for completeness and cross-checked for consistence and correctness. The participants had the right to withdraw their participation at any time without showing any reason; they were assured about strict confidentiality of data and that the data would be used for research purpose. Chance for physical, psychological, social or any other sort of risk was minimum. Data were analyzed by using software Statistical Package for Social Sciences (SPSS). Qualitative data were presented in frequency and percentages, while analysis of quantitative data was done by Chi-square test.

Results

Out of 120 respondents, majority of the respondents (37.5%) were in age group 36-45 years. It was also found that 27.5% respondents belonged to age group 25-35 years. The rest 20.0% and 15% were in the age group of 46-55 years and 56-65 years respectively. The mean age of the total respondents was 43.24±11.318 years. (Table- I)

Table no: 1. Distribution of the respondents by age (n=120).

Age in years	Frequency & (%)
25-35 years	33 (27.5%)
36-45 years	45 (37.5%)
46-55years	24 (20.0%)
56-65 years	18 (15.0%)
Total	120 (100%)

$\bar{x}$ ± SD in respondents: 43.24±11.318 years

The study showed that out of 120 respondents, more than half (57.50%) of the respondents were male and 42.50% were female (Fig -1).

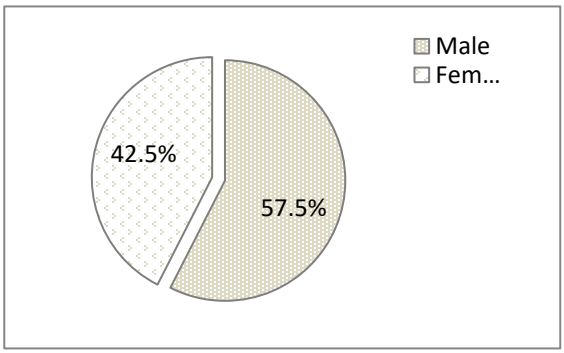


Fig no 1: Distribution of the respondents by sex.

Out of 120 respondents, majority of the respondents (46.7%) were in N gene CT value 21-30. It was also found that 30.8% and 22.5% respondents belonged to 31-40 and 10-20 N gene CT value respectively. Among 120 respondents, majority of the respondents (40.0%) were in ORF-1ab gene CT value 31-40. It was also found that 40.0% and 20.0% respondents belonged to 21-30 and 10-20 N gene CT value respectively. Out of 120 respondents, majority of the respondents (56.7%) were in 91% to 100% O_2 saturation. It was also found that 17.5% respondents belonged to 71%-80% and 81%-90% O_2 saturation respectively. Only 8.3% were in 60%-70% O_2 saturation

Table-II: Distribution of the respondents by N gene, ORF-1ab gene & oxygen saturation.

Variable	Frequency & Percentage (N) & (%)
N gene CT value	
10 to 20	27 (22.5%)
21 to 30	56 (46.7%)
31 to 40	37 (30.8%)
ORF-1ab gene CT value	
10 to 20	24 (20.0%)
21 to 30	48 (40.0%)
31 to 40	48 (40.0%)
Oxygen saturation	
60% to 70%	10 (8.3%)
71% to 80%	21 (17.5%)
81% to 90%	21 (17.5%)
91% to 100%	68 (56.7%)

The study showed that out of 120 respondents, more than half (62.5%) of the respondents had X-ray findings negative and 37.5% had X-ray findings positive. (Fig- 2)

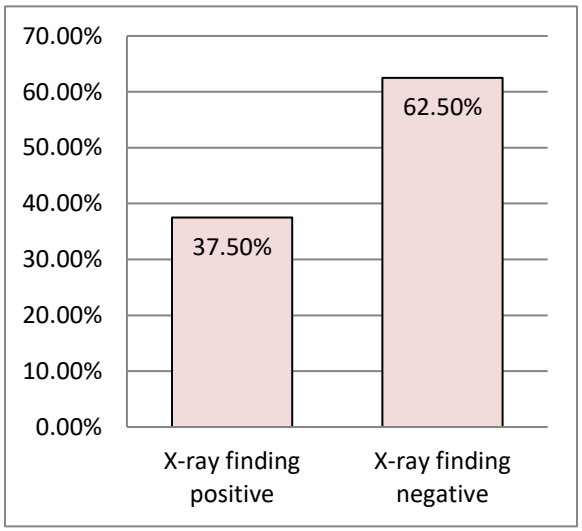


Fig- 2 : Distribution of the respondents by X-ray findings.

Table-III: Relationship between respondents N gene CT value, ORF-1ab gene with their X-ray findings.

Variables	X-ray findings		'P' value
	Positive	Negative	
N gene value			
10-20	27(60.0%)	0(0.0%)	
21-30	18(40.0%)	38(50.7%)	<0.001
31-40	0(0.0%)	37(49.3%)	
ORF-1ab gene value			
10-20	24(53.3%)	0(0.0%)	
21-30	21(46.7%)	27(36.0%)	<0.001
31-40	0(0.0%)	75(100%)	

The relationship between X-ray findings with N gene CT value and ORF-1ab gene value were statistically highly significant both of analysis P value <0.001 respectively (Table-III).

Table-IV: Relationship between respondents N gene CT value, ORF-1ab gene with their oxygen saturation status.

Variables	Oxygen saturation in percentage		'P' Value
	60%-80%	81%-100%	
N gene value			
10-20	23(74.2%)	4(4.5%)	
21-30	8(25.8%)	48(53.9%)	<0.001
31-40	0(0.0%)	37(41.6%)	
ORF-1ab gene value			
10-20	19(61.3%)	5(5.6%)	
21-30	12(38.7%)	36(40.4%)	<0.001
31-40	0(0.0%)	48(53.9%)	

The association between oxygen saturation in percentage with N gene CT value and ORF-1ab gene value were statistically highly significant both of analysis P value <0.001 respectively (Table-IV).

according to the Macafee classification. This study shows that out of the 36 live born babies 29 cases (80.55%) were premature i.e. birth weight <2.5 kg and only 8 baby cases (22.22%) with birth weight >2.5 kg.

Conservative management could only be done for 17 cases. Delivery was deferred ranging from 24 hours to a period of 4 weeks. The foetal outcome was very satisfactory on conservative management. 16 babies were live born with only 1 still birth and 8 babies of normal weight i.e. >2.5 kg.

Out of the 50 cases studied, there was only 1 case (2%) that died due to severe blood loss and irreversible shock in postpartum period. Among all the cases, there was 06(12%) neonatal death and 08(16%) stillbirth. Majority of the patients 32(64%) had no maternal morbidity. Only 18% had morbidity like postpartum haemorrhage 6(12%), wound dehiscence 5(10%), puerperal sepsis 2(4%), urinary tract infection 2(4%) and 3(6%) patients need hysterectomy. During hospital stay 92% patient received blood transfusion.

Discussion

In our study, 50 cases of placenta praevia were enrolled to find out the relationship and its modifiable factors, age, parity, antenatal care, presentation, mode of delivery and obstetric outcome. Among them 50 patients were documented to have placenta praevia which accounts for 1.19% (Table-1). This result is not very different in comparison to other studies like study of Loto O[9]. Placenta praevia is found in approximately 0.5% to 1% of all pregnancies[5].

Advanced maternal age increases the chance of placenta praevia[10]. Placenta praevia occurs more commonly in women above 35 years compared to those at age 20 or less.[4] But in this study maternal age 25-29 years suffered from placenta praevia more, it can be correlated with that of Nahar[11], Quayyum[12], Rumana[13]. This could be explained by the fact that in our country still girls marry at a younger age, and so repeated child bearing is maximum at this stage. Majority of patients 90% were housewives because most of them 19(38%) had only primary education and illiteracy about 16(32%).

In this study 70% patients belong to lower socioeconomic group. This is slightly higher than study of Akther[14].

It has been seen that it occurs only once in 1500 primigravida while it occurs in 20 among grand multiparas.[4] In this study most of the patients were multigravida (about 98%) – of which 32% were 3rd gravida and 2% were primigravida . The figure correlates with that of Tuzović L. Djelmis J. Ilijić M[5].

In this study, 37(74%) patients out of 50 were associated with different risk factors. Among them 17(34%) were associated with H/O of caesarean section, 13(26%) were associated with H/O abortion (spontaneous or induced); M/R and D,E&C. This is similar with the study of Tuzović L. Djelmis J. Ilijić M[5]. In this study, no risk factor was identified in 13(26%) cases.

Patients in this study were admitted in a varied range of gestational age starting from 29 weeks to more than 38 weeks of gestation. The maximum number of cases – 32% was admitted at the gestational age which also correlates with that of Quayyum[12], Rumana[13].

Regular antenatal check-up may reduce the risk of complications by prior determination of blood group, prevention of anaemia in suspected cases, confirmation of diagnosis by USG, booking the patient for hospital confinement and avoidance of trauma by vaginal examination. In this study, only 24% had regular antenatal care and 34% had irregular antenatal care. Among them some had only history of one antenatal checkup. Highest neonatal death (42%) was observed in cases having no antenatal check-up. One patient who died in this study was without any antenatal care.

In this study, most of the patients 64% started bleeding during resting in bed or sleeping condition. Second position is sitting or during cooking, that was 20%. This is similar with the study of Nahar[11]. About 36% patient attended hospital were in labour (table-2) and among them 10% patients were in hypovolemic shock and rest were not in labour and gave history of repeated per vaginal bleeding. Only 20% patient had no history of P/V bleeding during pregnancy. They were diagnosed by USG or incidentally during caesarean section.

Discussion

Majority (37.5%) of the respondents were in age group 36-45 years with mean age was 43.24 ±11.318 years. In a another study of New York , 205 patients were included and median age was 45 years.[7] There were more than half (57.50%) respondents male and 42.50% were female. In our study, majority (46.7%) had N gene CT value 21-30, 40.0% had 31-40 ORF-1ab gene value and 56.7% were in 91-100% O_2 saturation status. In this study, positive X-ray findings were 37.5%. The relationship between X-ray findings with N gene CT value and ORF-1ab gene value were statistically highly significant (P<0.001) respectively. X-ray findings more positive in lower range of N gene CT value and ORF-1ab gene value respectively. In other study, the viral load in respiratory samples was greater during the initial stages of the disease, reached a peak in the 2nd week from disease onset and was followed by lower loads.[8] Higher viral loads also showed an inverse correlation with Covid-19 severity across the cohort.[7] Another study believed that higher viral loads are seen in mild disease rather than severe disease.[7] The association between oxygen saturation in percentage with N gene CT value and ORF-1ab gene value were statistically highly significant(P<.001) respectively. Lower range of N gene and ORF-1ab gene value indicate lower O2 saturation percentage. Lower CT values of patients with mild disease compared to those with severe disease showed by Sweta et al.[9] Zheng and Liu et al from China have also reported higher viral loads and longer persistence of the virus in patients with severe disease as compared to those with mild disease.[9] However many other studies have not explored this relationship of CT value with disease severity.[9]

Conclusion

High SARS-CoV-2 viral load (low CT value) was found to be an important predictor of disease severity and may be useful in predicting the clinical course and prognosis of patients with COVID-19. However there is a wide heterogeneity in fluid samples and different phases of the disease and these data should be interpreted with caution and only considered as trends. In aggregate, these observations support the hypothesis of checking and reporting viral load by quantitative RT-PCR, instead of binary assessment of a test being positive or negative.

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ORIGINAL ARTICLE

A study on outcome of intramedullary interlocking nailing in closed fracture distal third of shaft of tibia

Mannan MA[1], WH Tarafder WH[2], Talukder TK[3], Karim MR[4]

Abstract

Background: Fracture distal third of shaft of tibia is not uncommon. Purpose of this study was to evaluate the outcome of intramedullary interlocking nailing in closed fracture distal third of shaft of tibia.

Methods: This cross sectional study was carried out at Shaheed Ziaur Rahman Medical College Hospital, Bogura from July 2020 to June 2022. Total 21 cases were selected by purposive sampling technique. Initially 25 were selected but 4 them were lost during follow up. Among them 19 were males and 2 were females. After initial resuscitation and immobilization, they were taken up for internal fixation. The time of surgery elapsed between fracture and surgery was 5 (minimum) to 28 (maximum) days. They were periodically followed at 6 weeks, 12 weeks, 20 weeks, 24 weeks, 28 weeks and every eight weeks thereafter till fracture union.

Results: In this study, 19 (90.48%) were united & 2 (9.52%) were non-united. 1 (4.76%) patient had osteomyelitis which was settled after nail removal and antibiotics. 2 (9.52%) non-union cases were treated by plating. The final outcome observed was 52.39% (11) excellent, 33.33 % (7) good, 4.76% (1) fair & 9.52% (2) poor results. There were overall 85.71% (18) satisfactory & 14.29% (3) unsatisfactory results. The outcome was analyzed with Johner and Wruh criteria.

Conclusions: The study shows that interlocking nailing in closed fracture distal third of shaft of tibia provides satisfactory outcome, acceptable alignment, early mobility, early weight bearing and low complications. So intramedullary interlocking nailing of closed fracture distal third of shaft of tibia is a safe & reliable method of management.

Keywords: Closed fracture distal third of shaft of tibia, interlocking nailing.

KuMCJ, June 2022; Vol. 6(1): 12-17

Introduction

Fracture distal third of shaft of tibia is not uncommon. This fracture is challenge for orthopaedic surgeon due to devoid of muscle attachment, sparse soft tissue coverage, wide medullary canal predisposing to the coronal plane mal-alignment & proximity of ankle joint leading the rotational mal-alignment while fixing the fractures.

Though there are various modalities of treatment for distal third fractures, choosing an ideal implant depends on the various factors, including patient characteristics. The dramatic success of interlocking nailing of femoral fractures led the surgeons to believe that similar results might be achieved when applied

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to the tibia. Because of its success, the indications have been extended to those of the proximal and distal metaphyseal region.[1] The osteosynthesis of tibial fractures with a locked intramedullary nail is recommended by various authors due to the high union rates, low infection and deformity rates and good functional results.[2] Although different treatment method developed for distal tibia fractures exist, the optimal method of fixation is still in debate. Most series of fractures of the tibia contain a proportion of fractures in the distal metaphysis which are wholly extra articular. There is evidence that the mechanism of injury and the prognosis of these fractures are different from those of pilon fractures,[3] but their proximity to the ankle makes the primary treatment more complicated than that for fractures of tibial diaphysis.[4] So this study was conducted to analyze the outcome of intramedullary interlocking nailing in closed fracture distal third of shaft of tibia.

Methods

This cross sectional was carried out at Shaheed Ziaur Rahman Medical College Hospital, Bogura from July 2020 to June 2022. Total 21 cases were selected by purposive sampling technique. Initially 25 were selected but 4 them were lost during follow up. Among them 19 were males and 2 females. The common mode of injury is road traffic accidents. After initial resuscitation, patients with symptoms suggestive of distal third tibia were examined both clinically and radiologically. Radiographs of the affected leg with knee and ankle joints were taken. The distance of the fracture from the ankle joint line ranged from 5 to 11 cm. All fractures were classified according to OTA system. There were totally 19 patients in type A, 2 patients in type B. Pre-operative tibial nail size was determined. The nail length should permit end to be countersunk with the distal end centered in the distal epiphysis. Regional anaesthesia (SAB) was used in all patients. Longitudinal midline patellar tendon splitting incision was used. Carm image intensifier was used. Reamed interlocking nailing was done in all closed fractures. Both proximal and distal locking (2/3 screws) was done in all cases. They were followed at 6 weeks, 12 weeks, 20 weeks, 24 weeks, 28 weeks and every eight weeks thereafter. Fracture union is considered delayed when healing has not advanced after three months. Fracture is considered united when there is no tenderness and X-ray evidence of 3 out of 4 cortices union. Non-union was considered when there is no sign of healing after 6 months. Fracture union was defined as healing of at least 3 of 4 cortices on biplanar plain radiograph. Delayed union was defined as a lack of any healing on plain radiograph within 3 months. Non-union was defined as a lack of any healing on plain radiograph within 6 months. Mal-union was defined as more than 5° of angular deformity or shortening of more than 1 cm.[12,13]

Inclusion criteria

All skeletally mature patients with fracture distal third of shaft of tibia.
Closed fracture distal third of shaft of tibia.
Location of fracture 5 cm above the ankle joint.
Type of fracture(according to OTA system) type A & type B fracture
Duration of fracture less than 4 wks.

Exclusion criteria

Open fracture
Fractures with intra-articular extension.
Distal tibial fractures treated with other modalities.
Segmental fractures
Pathological fracture

Depending upon the progress of fracture union partial and full weight bearing started. Knee joint Ankle joint and sub talar joint function assessed during periodic review. Any evidence of rotational deformity was observed periodically. The Johner and Wruh (1983) criteria was used to analyze the end results. These criteria include non-union/ osteomyelitis, amputations, neurovascular disturbances, deformity- varus/valgus, anteversion/ recurvatum, rotation, shortening, mobility- knee, ankle, pain & gait[5].

Results

Total 21 patients underwent surgery and then were followed up for 4 months to 1 year. Age range was between 21 and 60 years with mean (±SD) being 38.10 (±13.30) years. 19 (90.48%) were male and 2 (9.52%) were female patients.

There were 19 (66.67%) patients right sided fracture and 7 (33.33%) left sided fracture. There were 19(90.48%) type A and 2 (9.52%) type B fracture according to OTA classification. 19 (90.48%) fracture were due to motor vehicle accident, 1 (4.76%) was due to fall and 1 (4.76%) was due to assault.

Table-I Mechanism of injury

Cause	Number of Cases N & (%)
Motor vehicle accident	19 (90.48%)
Fall	01 (4.76%)
Assault	01 (4.76%)

The time of surgery elapsed between fracture and Surgery was minimum & maximum of 5 & 28 days respectively with mean 16.52±7.64 days. Total hospital stay was 12 days to 26 days with average 16.62 days. Postoperative hospital stay was average 3.19 days. In 2 or 3 distal screws applied, 19(90.48%) was united & 2(9.52%) was non-united. In closed technique 10 (90.91%) were satisfactory & 1 (9.09%) was unsatisfactory while in open technique 8 (80%) were satisfactory & 2 (20%) was unsatisfactory.

Table- II : Distal screws

No. of screws	No. of Patients	No. of union N & (%)
2 Screws	17	15 (88.24%)
3 Screws	4	4 (100%)

1(4.76%) patient had osteomyelitis which was settled after nail removal and antibiotics. No patient had developed neurovascular complications. 5 patients had varus/valgus deformity among 3 patients had 2 to 5 degrees & 2 patients had 6 to 10 degrees deformity. 4 patients had anterior/posterior deformity; among them 2 patients had 0 to 5 degrees & 2 patients had 6 to 10 degrees deformity. No anteversion or recurvation deformity noted. 6 patients had Shortening among 3 patients 0.5 cm and 3 patients 1 cm. 2 (9.52%) patients had non-union which was treated by plating. All patients had full range of knee mobility. 5 patients had occasional ankle pain. All the patients had normal subtalar movements. 4 patients had anterior knee pain. Gait is normal in almost all patients except 3 patients.

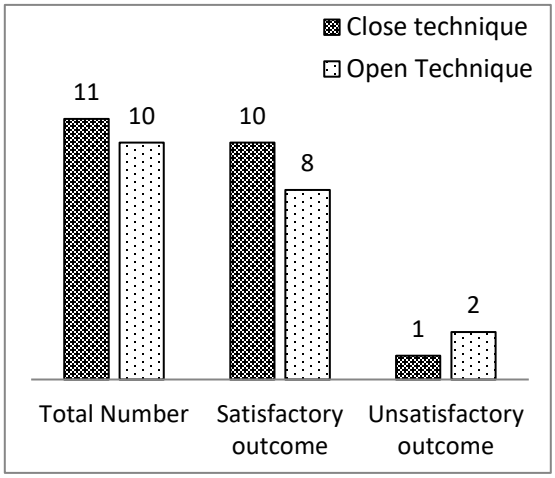


Fig.-1: Technique of operation with outcome.

Table-III : Complications

Complications	No. of cases N & (%)
Osteomyelities	1 (4.76%)
Varus / Valgus deformity	5 (23.81%)
Anterior / Posterior deformity	4 (19.05%)
Shortening	6 (28.57%)
Nonunion	2 (9.52%)
Knee pain	4 (19.05%)
Ankle pain	5 (23.81%)
Limping gait	3 (14.29%)
Screw loosening	1 (4.76%)

The mean time of healing was 17.21±4.58 weeks. 4 (19.05%) fractures healed in 12 weeks, 7 (33.33%) fractures healed in 16 weeks, 4 (19.05%) in 20 weeks, 4 (19.05%) in 24wks. Overall 19 (90.48%) were united & 2 (9.52%) were non-united.

Table IV: Time of fracture union.

Time of radiological union in wks.	Excellent	Good	Fair	Poor	Total		
	No.	No.	No.	No.	No.	%	Result
12	4	-	-	-	4	19.05	Overall united 90.48% & non united 9.52%
16	7	-	-	-	7	33.33	
20	-	4	-		4	19.05	
24	-	3	1		4	19.05	
Non union	-	-	-	2	2	9.52	
Total	11	7	1	1	21	100	

In this study, the final outcome was observed 52.39% (11) excellent, 33.33% (7) good, 4.76% (1) fair & 9.52% (2) poor results.

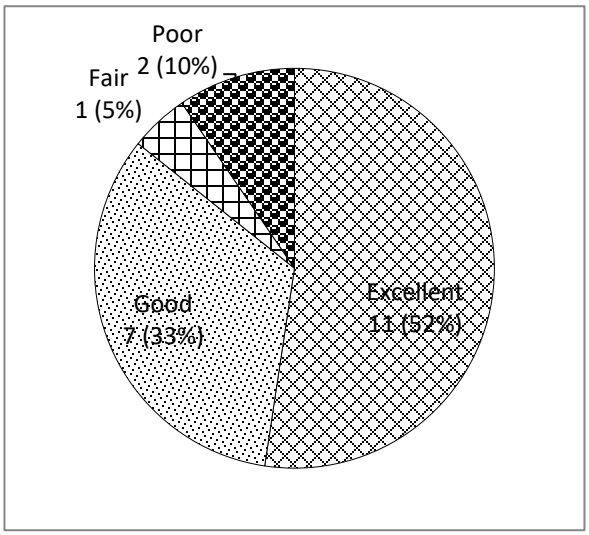


Fig-2: Final outcome of all the cases.

There were overall 85.71% (18) satisfactory and 14.29% (3) unsatisfactory results.

Discussion

From July 2020 to June 2022, 21 cases were studied. There were 19 males and 2 females. In this study, the mean age of the patients was 38.10±13.30 years (range 21-60 years). George CB et al. (2007) have also reported similar mean age (range 17-85 years).[7] Haydar AJ et al. (2005) and Valier et al (2006) both reported the mean age of 38 years in their series.[9,10]

Most of these fractures were sustained in road traffic accidents. In 1 patient fractures occurred due to the fall of heavy weight and there was 1 fracture following assault. The range of follow up was from 4 months to 1 year. All cases (21) were closed fractures. Right leg was affected in 14 patients and left leg in 7 patients. All the fractures were classified according to orthopaedic trauma association classification system. The time of presentation varied from immediately after the injury to 20 days after injury. Depending on the general condition of the patient the time taken for surgery elapsed from 5 days to 28 days with mean 16.52±7.64 days.

Reamed interlocking nailing was done in all closed fractures. El Ibrahimi (2009) confirmed that good results with no major complications were obtained with reamed nailing[20]. Fan (2005) reconfirmed that there were no signs of nonunion or malunion.[21]

There was an associated fibular fracture in 20 patients, out of which 2 (10) patients had upper, 5 (25%) patients had middle third fibular fracture, 13 (65%) patients had lower third fibular fracture but only 1% patient had syndesmotic disruption which was treated by plating to achieve reduction. On reviewing literature, in a study of Varsalona R, Liu GT (2006) evaluating the role of fibular fixation in distal tibial metaphyseal fractures they concluded “adjunctive fixation of concomitant fibular fractures without associated syndesmotic

or ankle pathology is not necessary in surgically stabilized extra-articular metaphyseal fractures of the distal tibia".[10] Although fibular fixation has been shown to improve stability of distal tibial fractures, there has been increased potential for soft tissue-related complications and a delay of tibial fracture healing. Whereas Egol, Kenneth A et al. (2006) concludes that the proportion of fractures that lost alignment was smaller among those receiving stabilization of the fibula in conjunction with interlocking nailing compared with those receiving interlocking nailing alone.[14]

Patients were encouraged to get out of bed on second day. Knee and ankle mobilization started immediately. Most of the patients were allowed partial weight bearing after 6 weeks based on clinical and radiological evaluation. Dynamization was performed in 4 patients with mean time of 12 weeks.

In this study, the mean time for clinical and radiological union was 17.21±4.58 weeks. Thanigaimani K (2016) reported the average time of radiological union was 16 weeks.[15] Whereas, AHSM Kamruzzaman & S. Islam (2011) reported the average time of radiological union was 18 weeks.[16]

In this study, in 2 or 3 distal screws 19(90.48%) was united & 2(9.52%) was non-united. Also Mohammed et al (2007) showed that 80% of non-unions in distal third fractures had only one distal locking screw compared to 20% who had 2 distal locking screws.[17]

Here, overall 19 (90.48%) was united & 2(9.52%) was non-united. Robinson (1995) and Nork (2005) who reported a 100% union rate.[18,19] Kruppa et al (2015) reported 19% non-union and 23.8% mal-union in their series.[6]

Overall 85.71% patients obtained good to excellent results (excellent 52.39%, good 33.33%). Tyllinakis (2007) reported 86.3% satisfactory or excellent results.[11] Thanigaimani K (2016) reported 85% satisfactory or excellent results.[15]

Conclusion

The study shows that interlocking nailing in closed fracture distal third of shaft of tibia provides satisfactory outcome, acceptable alignment, early mobility, early weight bearing and low complications. Fibular fixation needs to be done only in patients with syndesmotic disruption & other patients with interlocking nailing only. Intramedullary interlocking nailing of closed fracture distal third of shaft of tibia is a safe & reliable method of fixation to achieve satisfactory results.

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ORIGINAL ARTICLE

Assessment of safe drinking water and sanitation status of slum dwellers at Kumarkhali municipality under Kushtia district

Farazi MSH, Rahman MM, Hossain MAY, Adhikary A, Johora MF

Abstract

Background: Proper water and sanitation is a major prerequisite to achieve the Sustainable Development Goals, including good health and gender equity.
Methods: This cross sectional descriptive study was carried out from December 2021 to January 2022 with a view to assess the safe drinking water and sanitation status of slum dwellers at Kumarkhali municipality under Kushtia district. Sample size was 350 and was selected purposively. Chi-square test was used to evaluate the differences by using SPSS 23 version.
Results: The study evaluated 58.3% and 41.7% were female and male respondents respectively with mean age of 37.94 ± 13.855 years and mean monthly family income was 12514.86 ± 6810.65 BD Taka. Majority (39.71%) were primary level educated. Majority (95.4%) of the respondents used tube-well water as for drinking and most (74.0%) of them used sanitary latrine. Majority (87.4%) and 98.0% respondents washed hand routinely before eating and after defecation respectively. Most of them (96.9%) used water and soap for hand washing after defecation and about all (98.0%) practiced of wearing sandal or slipper when using latrine. The relationship between safe drinking water and economic status was highly significant ($p<0.001$, OR: 0.174). The relationship between sanitary condition with educational and economic status was also highly significant ($P<0.001$, OR: 2.470 and $P<0.001$, OR: 5.418 respectively).
Conclusion: The study provided important information those might help the concerned people take appropriate measures, improving consciousness, adopting a healthy lifestyle.

Key words: Safe drinking water and Sanitation status, Slum Dwellers.

KuMCJ, June 2022; Vol. 6(1): 18-23

Introduction

Attaining sustainable sanitation is still an issue and continues to be a gap throughout the globe. Worldwide, poor sanitation practice is responsible for 4% of deaths and 5.7% of morbidity.[1] World Health Organization (WHO) estimates that 1.5 million preventable deaths per year result from unsafe water, inadequate sanitation or hygiene – and, these deaths are mostly among children less than five years old.[2]

In 2010 and 2011 alone, diarrhoea resulted in 250 million lost school days mainly due to poor sanitation facilities and unhygienic conditions.[3-6] WHO estimates that approximately 2.6 billion people worldwide live with inadequate sanitation.[7] Poor water supply with inadequate waste collection and no facilities for disposal of excreta is a typical characteristic of the urban slum dwellers. Studies reported that slum dwellers

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are at high risk of diseases and high mortality due to sharing poor sanitation facilities and housing; and, these can be easily prevented by provision of safe drinking water and safe sanitation practices.[8-14] According to National Sanitation Foundation of the USA; "Sanitation is a way of life and is the quality of living in clean home, clean firm, clean business, and clean community.[15] The present study was therefore undertaken to assess the safe drinking water and sanitation status of slum dwellers at Kumarkhali Municipality under Kushtia District of Bangladesh.

Methods

This cross-sectional type of descriptive study was carried out in the several wards of Kumarkhali Municipal (slum dwellers) area of Kumarkhali upazilla under Kushtia District, namely Tebaria, Horijon polli, Sherkandi, Sweeper colony and Durgapur from December 2021 to January 2022 with a view to assess the safe drinking water and sanitation status of slum dwellers. Sample size was 350 and was selected purposively; they were interviewed with a partially structured questionnaire which was duly pretested. In order to simplify data collection and data handling, data were collected via face to face interview technique. Mean and percentage were two measurements of descriptive statistics and Chi-square test was used to evaluate the differences in safe drinking water and sanitation status of the respondents by using SPSS version 23 and statistical significant level at $P<0.05$.

Results

Regarding age of respondents majority of the respondents (29.7%) were in age group 18-29 years with mean age of 37.94±13.855 years. More than half (58.3%) of the respondents were female, majority (39.0%) of the male respondents were day laborer and most of the (72.1%) female respondents were housewives. About two third (60.8%) of the respondents were Muslim, equal half (50%) respondents lived in nuclear and joint family, more than half (52.3%) of the respondents monthly income were up to Tk=10000/- with mean monthly family income were 12514±6810 BD Taka, more than fifty percent (55.7%) had semi pucca houses (Table-I) and about three-fourth (72.0%) of the respondents were educated (Figure 1).

Table I: Distribution of the respondents by their socio-demographic characteristics (n=350).

Characteristics	Frequency N & (%)
Age (years)	
Mean±SD 37.94 ± 13.855	
18-29 years	104 (29.7%)
30-39 years	95 (27.1%)
40-49 years	74 (21.1%)
50-59 years	38 (10.9%)
≥60	39 (11.1%)
Gender	
Male	146 (41.7%)
Female	204 (58.3%)
Male respondents occupation	
Service/Business	56 (38.4%)
Farmer	3 (2.1%)
Day laborer	57 (39.0%)
Others	30 (20.5%)
Female respondents occupation	
Housewife	147 (72.1%)
Service/Business	24 (11.8%)
Day laborer	13 (6.4%)
Others	20 (9.8%)
Religion	
Islam	213 (60.8%)
Sonaton	135(38.6%)
Others	2 (0.6%)
Family type	
Nuclear	175 (50%)
Joint	175 (50%)
Monthly family income (BD Taka)	
Mean± SD 12514.86± 6810.65	
Up to 10000	183 (52.3%)
10001-20000	137 (39.1%)
20001-30000	25 (7.1%)
> 30000	5 (1.4%)
Housing condition	
Pucca	57 (16.3%)
Semi pucca	195 (55.7%)
Cutcha (made of mud)	98 (28.0%)

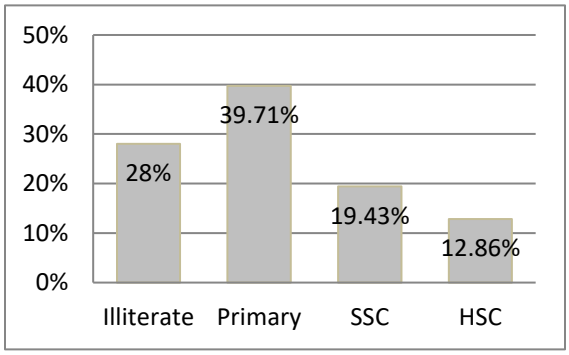


Figure 1: Distribution of the respondents by educational status (n=350).

Table II: Distribution of the respondents regarding safe drinking water status (n=350).

Characteristics	Frequency (%)
Source of drinking water	
Tube well	334 (95.4%)
Supply water	11 (3.1%)
Pond/River/Canal/Irrigations channels	3 (0.9%)
Others	2 (0.6%)
Source of water used for other purposes	
Tube well	298 (85.1%)
Supply water	35 (10.0%)
Pond/River/Canal/Irrigations channels	15 (4.3%)
Others	2 (0.6%)
Total time of collecting water from the source (minute)	
≤10 min	302 (86.3%)
11-20 min	35 (10.0%)
>20 min	13 (3.7%)
Treating water before use	
Yes	19 (5.4%)
No	331 (94.6%)

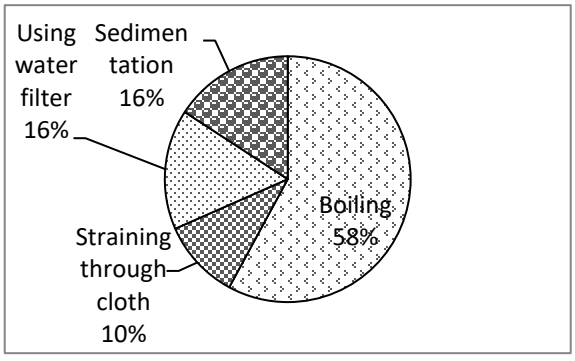


Figure 2: Distribution of the respondents by types of methods to treat water (n=19).

Table III: Distribution of the respondents regarding sanitation status (n=350).

Characteristics	Frequency N & (%)
Type of latrine	
Sanitary latrine	259 (74.0%)
Kancha latrine	91 (26.0%)
Number of members use the single latrine	
≤5 members	179 (51.1%)
6-20 members	142 (40.6%)
21-30 members	28 (8.0%)
> 30 members	1 (0.3%)
Wash hand before eating/holding foods	
Routinely	306 (87.4%)
Sometimes	42 (12.0%)
Never	2 (0.6%)
Wash hand after defecation	
Routinely	343 (98.0%)
Sometimes	7 (2.0%)
Never	0 (0.0%)
Substances used for hand washing after defecation	
Water & soap	339 (96.9%)
Only Water	5 (1.4%)
Water & ash	6 (1.7%)
Wearing sandal or slipper	
Yes	343 (98.0%)
No	7 (2.0%)

Regarding safe drinking water status, most (95.4%) of them used tube well water for drinking, 85.1% for other purposes, majority (86.3%) spent up to 10 minutes to collect water from the source and most (94.6%) of them did not practice treating water before use (Table II) and more than half (57.9%) of them used boiling as a method of treating water before use (Figure 2).

Regarding sanitation status, about three-fourth (74.0%) of the respondents used sanitary latrine, more than half (51.1%) of them used single latrine by ≤5 members, most (87.4%) of them washed hand regularly before eating/ holding foods and 98.0% practiced washing hand after defecation routinely, majority (96.9%) of the respondents used water and soap for hand washing after defecation and 98.0% practiced of wearing sandal or slipper when using latrine (Table III).

It was observed that relationship between safe drinking water practice and educational status was not significant (p>0.10). Association between safe drinking water and economic status was highly significant (P<0.001, OR: 0.174) (Table IV). Association between sanitary condition with educational status and economic status was both highly significant (P<0.001, OR: 2.470 and P<0.001, OR: 5.418 respectively) (Table V).

Table IV: Relationship between safe drinking water practice with educational status and economic status of the respondents (n=350).

	Safe drinking water practice		OR	p-value
	Unhealthy N (%)	Healthy N (%)		
Educational status				
Illiterate	4(30.8%)	94(27.9%)	1.149	> 0.10 (NS
Literate	9(69.2%)	243(72.1%)		
Economic status				
Poor and lower middle class	6(46.2%)	280(83.1%)	0.174	< 0.001*
Upper middle class and affluent	7(53.8%)	57(16.9%)		

NS=Not Significant, *Significant

Table V: Relationship between sanitary condition with educational status and economic status of the respondents (n=350).

	Sanitary condition		OR	p-value
	Unhealthy N (%)	Healthy N (%)		
Educational status				
Illiterate	40(42.1%)	58(22.7%)	2.470	< 0.001*
Literate	55(57.9%)	197(77.3%)		
Economic status				
Poor and lower middle class	90(94.7%)	196(76.9%)	5.418	< 0.001*
Upper middle class and affluent	5(5.3%)	59(23.1%)		

*Significant

Discussion

This study showed that most (29.7%) of the respondents was in the age group of 18 to 29 years and female were more (58.3%) than male (41.7%). It was found that 27.92 % were illiterate. Majority (60.8%) was Muslim and the next were Sonaton (38.6%). It was revealed that majority (52.3%) of the respondents had monthly income of Taka upto 10000 (BD Tk), followed by 10001 to 20000 comprised 39.10 % and the average monthly income was Taka 12514±SD 6810.65. The result was higher than that of study on 'Water and Sanitation in Dhaka Slum', 2018.[16] Majority (55.7%) of the respondents lived in semi pucca house and the rest lived in cutcha (made of mud) and pucca house. The result was differ from the SVRS 2020.[16]

Regarding source of drinking water, most of the respondents (95.40%) used tube well water and the result is similar with SVRS 2020.[16] Other sources of drinking water like supply water, well, pond or ditch, river, canal and rain-water comprise 4.6 % of the total use and the result was higher than a study in Jhanshi, Uttor Pradesh, India.[16] In our study maximum (94.6%) respondents did not practice treating water before use and only (5.4%) respondents practiced this. As mostly use tube well water, they need not to treat which was similar with a study.[18] This result is higher than that of similar study done in Dhaka slum, under World Bank.[17] Most (85.10%) of them used tube well water for other purposes, which was higher than another study. Regarding total time of collecting water from the sources, majority (86.3%) of them

spent less than ten minutes. According to Health for All 2000, one of major indicators regarding water is, safe water at home or within 15minutes walking distances.[19]

Regarding type of latrine used, about three-fourth (74.0%) used sanitary latrines and the result was similar with that of BDHS (2017/18)[20] but a little lower than a study on water and sanitation in Dhaka slum on 2018, World Bank.[17] Among the sanitary latrines users, about half (51.10%) of them shared single latrine by ≤5 members, 40.6% shared with nearly 6 to 20 members and the result was similar with a study in Dhaka slum, 2018.[17] Regarding hand washing practices, almost all (98.00%) of the respondents washed hand after defecation and most of them used soap and water for hand washing, which was higher than that of SVRS.[16]

In our study, there was no statistically significance between safe drinking water practice and educational status (p >0.10), which was differed from a study in Nigeria school children where there was significant association, the people that "drank untreated water" showed significant association with protozoan infections.[22] A statistically highly significant association was found between safe drinking water practice and economic status (p<0.001). The relationship between sanitary condition and educational status was highly significant (P<0.001) which was similar with the study done in Addis Ababa, Ethiopia.[21] The relationship between sanitary condition and economic status was highly significant (P<0.001, OR=5.418), which was similar with a study in Addis ababa, Ethiopia, 2015.[21]

Conclusion

The present study revealed that the educational, instructional and interventional program must be an imperative part in promote the knowledge of slum dwellers. The imparting of awareness and health education to slum dwellers is essential to progress family, community and country. Therefore, special attention should be given to enhance community awareness about safe drinking water practices and healthy sanitary conditions.

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ORIGINAL ARTICLE

Nutritional risk factors related to community acquired pneumonia among under-five children at Rajshahi Medical College Hospital

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Abstract

Introduction: Globally community acquired pneumonia (CAP) is the leading cause of under-five death. There are many risk factors for CAP; among them malnutrition, lack of exclusive breast feeding and low birth weight (LBW) are remarkable. Whereas incidence of CAP can be reduced by ensuring proper antenatal care in order to reduce preterm delivery, ensuring exclusive breast feeding practice and adequate nutritional supply to babies and lactating mothers.

Methods: This cross sectional study was conducted from January 2017 to December 2018 at Rajshahi Medical College Hospital in order to find out the nutritional risk factors related to CAP among under-five children, specially, in Rajshahi zone. For this study, total 246 children, aged 2 months to 59 months, were selected from Rajlshahi medical College Hospital by purposive sampling technique. Half of them (n=123) were cases who were taken from indoor and another half (n=123) were healthy controls who were taken from out patients department & EPI centre. After taking written consent from guardians, history was taken and physical examination was done. All information including history, clinical examination findings and investigation results were recorded in a predesigned data sheet. Data was presented as actual number and percentage of total. Chi-square test and odds ratio were used to demonstrate level of significance.

Results: Out of 123 cases only 25 (20.3%) cases had normal nutritional status and 98 (79.7%) cases were malnourished. Among 123 controls only 62 (50.4%) children had normal nutritional status and 61 (49.6%) children were malnourished. Malnutrition was significantly associated with CAP (P<0.001). 76 (61.8 %) cases were on exclusive breast feeding and 47 (38.2%) cases were not so; and, the difference was significant (P value <0.05). Among the cases 72 (58.5%) children had LBW and 51 (41.5%) children had normal birth weight; while, among the controls, 53 (43.1%) children had LBW and 70 (56.9%) children had normal birth weight. Low birth weight (LBW) was found associated with CAP (P<0.05).

Conclusions: This study identified some nutritional risk factors like malnutrition, lack of exclusive breast feeding and low birth weight (LBW). Early detection of these risk factors and thereby taking necessary actions will reduce the incidence of CAP in under-five children (2-59 months) and improve the quality of life.

Key Words: Community acquired pneumonia (CAP), Under-five children, Malnutrition.

KuMCJ, June 2022; Vol.6(1): 24-28

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Introduction

Pneumonia is a form of acute respiratory infection that affects the lungs. Pneumonia is the single largest infectious cause of death in children worldwide. It killed 808,694 under 5 children in 2017, accounting for 15% of all under 5 deaths in that year.[1] Among the all forms of pneumonia CAP (Community-acquired pneumonia) is the leading cause of death in under 5 children world wide[2]. CAP develops due to lower respiratory tract infection of the children who have not resided in a hospital or health care facility in the preceding 14 days.[3] They are infected in the community specially in the remote regions where poverty is common and has the less privilege to get health facilities.[4,5,6,7] According to World Health Organization (WHO) there are many risk factors associated with pneumonia. Among them seven risk factors are- low birth weight (LBW), under nutrition (malnutrition), household air pollution, human immunodeficiency virus (HIV) infection, non-exclusive breastfeeding (early weaning), household crowding and incomplete immunization.[8] Malnutrition and low birth weight are the major risk factors in developing countries.[9] Many studies have shown that, malnutrition is associated with increased mortality in pneumnia.[10,11] Malnutrition and LBW cause immunosuppression which are responsible for the increased incidence and severity of pneumonia. These two factors are preventable. By preventing these factors we can reduce the development of pneumonia and death.[9] Early initiation of breast feeding and avoiding bottle feeding (ie, adopting exclusive breast feeding) results in four times less chance of death from pneumonia.[12] Exclusive breast feeding followed by weaning with complementary feeding prevents malnutrition. Proper maternal care reduces the incidence of LBW that helps to reducing severity and mortality risk of pneumonia.[13] To have a look into these aspects of CAP, the current study was undertaken to find nutritional risk factors among under-five children attending the pediatrics department of Rajshahi Medical College Hospital, Rajshahi. It may be anticipated that by determining and addressing these risk factors would probably reduce the morbidity and mortality of CAP among under-five children in Bangladesh.

Methods

This study was a hospital based cross sectional study and conducted at the inpatient and outpatient department of Pediatrics and EPI center of Rajshahi Medical College Hospital, Rajshahi. Sampling method was purposive sampling and study duration was 2 years since January 2017 to December 2018. Study population was 2 month - 59 month aged children of both sexes suffering from community acquired pneumonia (CAP). Cases were selected from inpatient department of Pediatrics of RMCH and controls were selected from paediatric OPD & EPI center of Rajshahi Medical College Hospital. Children suffering from hospital acquired pneumonia (HAP) and other respiratory illness were excluded. Total 246 children were recruited of which 123 were cases (ie, children suffering from pneumonia) and 123 were control (ie, children not suffering from pneumonia). They were selected on the basis of inclusion and exclusion criteria. After taking written consent from guardians, history was taken and physical examination was done. All information including history, physical findings and investigation results were recorded in a predesigned clinical format. Pneumonia was defined as children with three or more of the following criteria: fever, cough or difficult breathing, fast breathing, chest indrawing and radiological evidences of pneumonia. Malnutrition was defined by Gomez classification as weight for age percentage (W/A) of the median of the National Centre for Health Statistics (NCHS). Following relevant investigations were done: CBC and chest X-Ray. Data were processed and analyzed by SPSS 16 for windows software programs. Data was presented as actual number and percentage of total. Chi-square test and odds ratio were used to demonstrate level of significance.

Results

Out of 123 cases, 82 (66.70%) patients were male and 41 (33.30%) patients were female, whereas among 123 controls 73 (59.30%) patients were male and female were 50 (40.70%). This says that greater number of patients of both groups were male. (Figure 1)

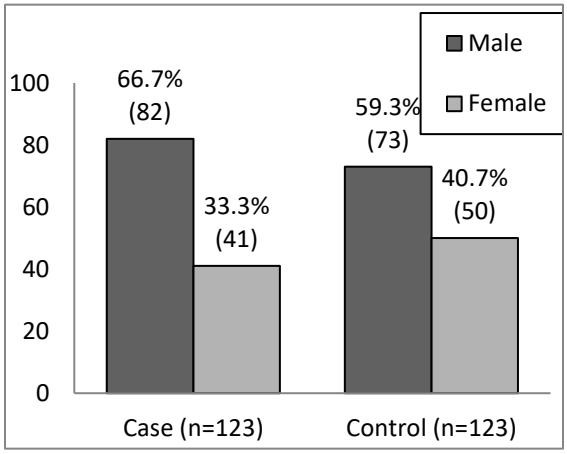


Fig 1: Gender distribution of the case and control groups

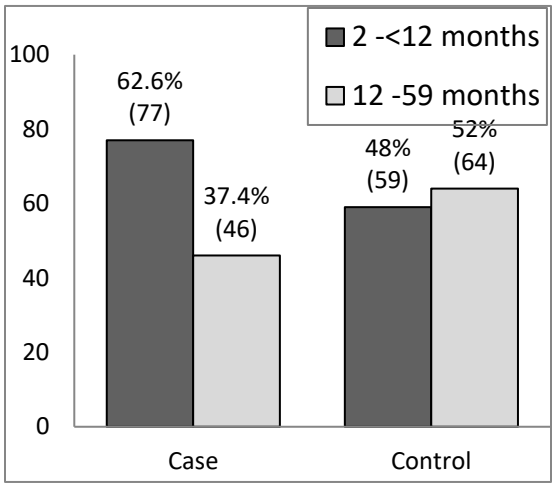


Figure 2: Distribution of cases and controls on the basis of age groups

The figure shows that, cases were predominant between 2-<12 months of age (62.60%) whereas controls were predominant between 12-59 (52%) months of age; ie. 2-<12 months of age group are more susceptible to CAP then 12-59 months of age.

Table I: Distribution of cases and controls according to Nutritional status

Malnutrition	Case (%)	Control (%)	Total (%)
Yes	98(79.7%)	61(49.6%)	159(64.6%)
No	25(20.3%)	62(50.4%)	87(35.4%)

Odd's ratio=3.9; Chi-square=24.346 with df=1 & 'P'<0.000

This table shows that out of 123 cases only 25 (20.3%) cases had normal nutritional status and 98(79.7%) cases were malnourished. Among 123 controls only 62 (50.4%) children had normal nutritional status and 61 (49.6%) children were malnourished. Malnutrition was significantly associated with CAP (P=0.000).

Table II: Distribution of cases and controls on the basis of Malnutrition

Malnutrition	Case (%)	Control (%)	Total (%)
Mild	60(61.22%)	41(67.21%)	101(63.52%)
Moderate	34(34.69%)	20(32.78%)	54(33.96%)
Severe	04(4.08%)	00(0%)	04(2.52%)
Total	98(100%)	61(100%)	159(100%)

This table shows that among the cases 61.22% had mild malnutrition, 34.69% had moderate malnutrition and 4.08% had severe malnutrition. Among controls 67.21% had mild malnutrition, 32.78% had moderate malnutrition and 0% had severe malnutrition.

Table III: Distribution of cases & controls on the basis of Exclusive Breast feeding

Exclusive Breast feeding	Case (%)	Control (%)	Total (%)
Yes	47 (38.2%)	30 (24.4%)	77(31.3%)
No	76 (61.8 %)	93 (75.6 %)	169(68.7%)

Odd's ratio=1.91; Chi- square=5.463 with df=1 & 'P'=0.019

This table shows that among 123 cases 76 (61.8 %) cases were on exclusive breast feeding and 47 (38.2%) cases were not .The corresponding figures for control group were 93 (75.6 %) and 30 (24.4%) respectively. Exclusive breast feeding significantly reduces CAP (P=0.019).

Table IV: Distribution of cases and controls on the basis of diarrhea

History of diarrhea	Case (%)	Control (%)	Total (%)
Yes	26(21.1%)	10(8.1%)	36(14.6%)
No	97(78.9%)	113(91.9%)	210(85.4%)

Odd's ratio=3.02; Chi- square=8.33 with df=1 & 'P'=0.004

This table shows that among the children 26 (21.1%) cases and 10 (8.1%) controls had diarrhea in the past 3 months while 97 (78.9%) cases and 113 (91.9%) controls did not have diarrhea in the past 3 months. History of diarrhea was significantly associated with CAP (P=0.004).

Table V: Distribution of cases and controls on the basis of Birth Weight

Birth Weight	Case (%)	Control (%)	Total (%
LBW	72(58.5%)	53(43.1%)	125(50.8%
Normal	51(41.5%)	70(56.9%)	121(49.2%

Odd's ratio=1.86; Chi- square=5.87 with df=1 & 'P'=0.015

This table shows 72(58.5%) children were of LBW & 51(41.5%) children had normal birth weight among 123 cases while 53 (43.1%) children had LBW & 70(56.9%) children had normal birth weight among 123 controls. Prematurity and low birth weight were significantly associated with CAP (P=0.015).

Discussion

This study has shown that various risk factors such as malnutrition, LBW, lack of exclusive breastfeeding increase the risk of CAP among under-five children (2-59 months). In this study, out of the total 246 children only 87(35.4%) had normal nutritional status. The number was more in controls as compared to cases. Protein-calorie malnutrition resulting from an inadequate intake or utilization of calories of protein in the diet is a major determinant of morbidity and mortality. Malnourished children have defective cell mediated immunity secondary to thymolymphatic depletion leading to severe gram negative infections and sepsis. They may also have qualitatively abnormal immuneglobulins and impairment of key enzymes involved in bactericidal infection of leucocytes. Humoral immune function is also impaired because of decrease secretory IgA that acts as a first-line defense at the mucosal surfaces, including the respiratory tract. This study found a highly significant (p value <0.001, OR =3.98) Association between CAP and malnutrition. Malnourished children were 3.98 times more likely at risk of CAP as compared to normal nutritional status of children. This is also supported by other studies by Broor et al.[14] (OR = 1.85; 95% CI:1.14-3.0) , Fatmi et al.[15] (AOR=2.2, 95% CI:1.0, 5.23) and Savitha *et al.*[16] (AOR=6.939; 95% CI: 1.06-45.29). Rudan *et al.*[17] and Srivastava et al.[18] found similar association. A meta-analysis published in 2013 confirmed that malnutrition was a risk factor for pneumonia and severe infection in developing countries. Nevertheless, no such association was found in the study conducted in industrialized nations by Jackson et al.[9].

The critical role of breast-feeding in improving infant and under-five-year survival in resource-limited settings has been well documented since the mid-1970s. In this study, lack of exclusive breastfeeding (p <0.05, OR =1.92) was significantly associated with CAP. Partially breastfed showed 1.92 fold increased risk of getting CAP. Similarly, in a study by Shams Arifeen et al.[19], it was observed that partial or no breastfeeding was associated with a 2.40 fold higher risk of deaths attributable to pneumonia. Early weaning has been associated with a greater prevalence of CAP, with more severe cases and even death[20].

Srivastava et al.[18], found when children less than 1 year of age were only considered, lack of exclusive breastfeeding [51.35% (cases) vs. 22.58% (controls); 'P' value <0.05] was significantly associated with pneumonia. Broors et al.[14] reported that lack of exclusive breastfeeding for at least four months as a risk factor for pneumonia and weaning from breast milk at less than six months was have also been found to be a risk factor for pneumonia[21].

This study showed significant association between CAP with LBW & prematurity (P<0.05, OR =1.86).

Children with a history of low birth weight were 1.86 times at risk of CAP compared to children with normal birth weight. This result is in agreement with Park [22] and Liu et al.[23]. This might be due to poor pulmonary function and low immunity in LBW babies which makes them more liable to pneumonia. Goya et al[24] and Tiewsoh et al.[25], found prematurity being an important risk factor for complicated pneumonia later in life. Pore et al.[26] showed odds ratio 7.57 revealed nearly 7.5 times more risk of developing pneumonia among premature as compared to full term mature baby.

Conclusion

The study had identified some nutritional risk factors for community acquired pneumonia (CAP) in under-five children. These factors are malnutrition, lack of exclusive breast feeding and low birth weight (LBW). Early detection of these nutritional risk factors and necessary actions directed towards these factors help us to prevent the development of CAP in under five children (2-59 months) and improve their quality of life.

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ORIGINAL ARTICLE

Modified Suzuki technique for both open and closed fracture dislocation of PIP joint and 1st MP Joint with or without Tendon Injury

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Abstract

Background: Fracture of small bones of hand is not an uncommon problem. This study was aimed at evaluation of clinical outcome of treatment of proximal interphalangeal joint fracture with 1st MP joint with or without tendon injury.
Method: This cross sectional study was conducted at 250 bedded General Hospital, Kushtia and The Alfalah Hospital, Jhenaidah from March 2018 to March 2021. Kirschner wire traction fixator was applied over 12 patients.
Result: Michigan hand scores were 85%. All patients returned to their activities without disability except one.
Conclusion: Modified Suzuki technique is cost effective, easily available and widely effective for various fracture types of the PIP joint and MP joint of hand which allow early mobilization.

Key word: Kirschner wire traction fixator, Fracture dislocation of PIP joint

Abbreviations: PRTS- pins and rubber traction system, PIP- Proximal Interphalangeal, DIP- Distal Interphalangeal, MP- Metacarpophalangeal, ROM- Range of motion.

KuMCJ, June 2022; Vol. 6(1): 30-33

Introduction

Comminuted intra-articular fractures of the proximal interphalangeal (PIP) joint and 1st MP joint fracture treatment may often be challenging to hand surgeons due to most commonly joint stiffness, long-term pain, post-traumatic arthritis and functional deficit.[1,2,3] Goal for treating these comminuted intra-articular joint fractures is to achieve anatomical reduction, stable fixation of the fracture fragments, soft tissue healing followed by early mobilization to prevent joint stiffness.[4,5] To treat these intra-articular fractures of the PIP joint various dynamic external traction systems including pins and rubbers traction system (PRTS) described by Suzuki et al. in 1994 provide a number of advantages. In this study, we used the modified Suzuki technique not only for these unstable intra-articular fractures of the PIP joint but also open fractures at the PIP joint and 1st Metacarpophalangeal joint.

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Materials and Method

The present study was conducted at 250 bedded General Hospital, Kushtia and The Alfalah Hospital, Jhenaidah. The study was carried out during the period from March 2018 to March 2021. The modified Suzuki fixator applied to 12 patients with PIP joint fracture including open fracture-dislocations, fracture at 1st metacarpophalangeal joint with or without tendon injury. There were 09 men and 03 women, mean age 3.0 (range, 18–60) years at the time of injury. There were 02 fractures in the thumb, 02 in the index finger, 04 in the middle finger, 03 in ring finger and 01 fracture in the little finger. The affected hands were the right in 09 cases and the left in 03 cases. There were 05 closed and 07 open injuries with 01 flexor and 02 extensor tendon injuries. The etiologies of the injuries were 04 from failing, 06 machinery injuries and 02 due to road traffic accidents. The average time from injury to surgery was 6 days (range from 1-15 days). Modified Suzuki fixator had the same principles of Suzuki et al. fixator.

Surgical Technique: Under Wrist and digital nerve block anesthesia with lidocaine 2% and image intensifier without any tourniquet the fixator was applied. Open fractures were treated by wound debridement, surgical toileting with povidone Iodine, H_2O_2 and saline irrigation. Tendons were repaired after fixation of fracture.

One smooth 1.5 mm diameter Kirschner wire (k1) placed centrally in the head of proximal phalanx perpendicularly on its long axis or head of 1st Metacarpal in case of thumb. The (k1) wire was bended in 90° angle at both sides of the finger towards finger tip. Each end of the wire must be long enough to make Hooks at both sides. Another Kirschner wire (k2) was placed centrally in the head of middle phalanx and proximal phalanx in case of thumb. The wire is bended at its tip to make hooks at both ends. Two rubber bands, on each side of the finger, connecting the hooks and creating traction force over the PIP joint and 1st MP joint in case of thumb. Prophylactic antibiotics administrated for all patients.

Post-operative Treatment: Immediately after surgery, active and passive exercise of all fingers was started. Patients were also instructed how to carry out exercises at home and how to take care of pin-site every day. Clinical and radiological examinations were taken every fortnight after surgery for 4–8 weeks. The Pin Rubber Traction System was removed at 4 to 8 weeks after surgery after obtaining radiographic confirmation of fracture union.

Results

11 patients were evaluated radiologically and clinically every fortnightly. Stiffness of finger was observed in 01 case due to lack of follow up after operation. The mean period of Kirschner wire traction fixator was 5 weeks (range 3-9 weeks). Mean follow up time 6 month (range 3-12 months). Anatomical union achieved in all cases. No malunion or joint instability was observed in 11 cases. Pin tract infection was observed in 02 cases but successfully treated with antibiotic and removal of wires. The average Michigan hand scores were 85% (range 64%- 98%), the average active flexion - extension ROM of PIP joint was 92°(range 50°-120°) and the average active flexion- extension of DIP was 72°(range 60°-80°). All patients returned to their activities without disability except one.

Discussion

Management of fracture dislocation of PIP joint is a challenge for most orthopedic surgeon. To stabilize and maintain reduction of fracture dislocation of PIP joint by trans-articular Kirschner wire for three weeks prevents joint movement till removal of K wire.[6,7] Immobilization of any joint interfere with the normal distribution of synovial fluid and nutrition of articular cartilage. Importance of continuous active and passive movements of joint in healing of hyaline articular cartilage was established by Salter et al.[8] in 1981. The ligamentotaxis provided by dynamic fixator



Case-1 (Above)



Case-2 (Above)



Case- 3 (Above)



Case- 4 (Above)

achieved and maintained the reduction of fracture of PIP joint and give results which are radiologically and clinically better than those obtained by ORIF. Kirschner wire traction fixator is cheap, simple in design and application. This fixator also allows both active and passive movements of the joint.[9] The modified Kirschner wire traction fixator had the same idea of dynamic traction fixation as PRTS of Suzuki et al.[10]

Conclusion

This study demonstrated good clinical results of comminuted intra-articular fractures and fracture-dislocations of the PIP joint including 1st MP joint of thumb treated by Pin Rubber Traction System. From this study, we found that the Kirschner wire traction fixator can be used to treat various difficult unstable injuries of fingers with very good functional outcome. This technique can be helpful to prevent joint stiffness by early mobilization of fingers and achieve anatomical reduction and stable fixation of fracture fragments. We believed that the Kirschner wire traction fixator can be a useful dynamic external traction system of fingers because it is cost effective, easily available and widely effective for various fracture types of the PIP joint and MP joint of hand.

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Published Errata

KuMCJ, June 2022; Vol.6 (1): 34

(1) KuMCJ, June 2021; 5 (1): 17.
Name of 6th Author:

Printed Error:

6. Dr. Biplob Kumar Roy

(1) Will be as follows -

Correct form:

6. Dr. Biplab Kumar Roy

Editorial policy & Instruction to Authors

KuMCJ, June 2022; Vol.6 (1): 35-38

Kushtia Medical College Journal is published twice in a year in the month of June and December. Manuscript written in English related to medical science will be received throughout the year and will be considered for publication provided that the article has not been already published or been submitted elsewhere for publication.

Articles submitted for publication may be in the form of original articles, case reports, review articles, recent advances, new techniques, book-review on clinical or medical education, adverse drug reactions or a letter to the editor. Author should obtain & submit written permission from appropriate authority if the manuscript contents any table, data or illustrations from any previously published article of any journal.

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Authors are requested to send three (03) hard copies and one soft copy (a CD or DVD or an email to *kumcj.bd@gmail.com*) to the editor in chief. *(Soft copy must be in "WORD" or "EXCEL" format and never be in PDF format.)* Authors must keep a hard & soft copy with them as reference. Manuscript must be accompanied by a covering letter addressing the Editor in Chief and signed by principal author declaring that (a) It has neither been previously published nor being submitted elsewhere for publication, (b) The manuscript has been read and approved by all the authors and (c) The order of authorship is the joint decision of principal author and all the co-authors.

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All manuscripts on receipt are initially screened by editors and registered. The manuscripts are sent to two or more reviewers for masking peer review. Thereafter a feedback is provided to the principle author. One masked copy of the proofs may be sent to principal author for careful correction of errors if any. The ultimate authority to accept or reject the article rest with the Editorial Board. Editorial board may ask any relevant explanation of any part or whole of the article form the author. Failure to comply or explanation will reject the article for publication.

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Conditions (a), (b) & (c) must all be met. Only funding, collection of data or general supervision of a research group is not sufficient for authorship. Editors may ask authors to describe what each author contributed.

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(f) Font is to be "Times new Roman", font size is to be "12".
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(i) Paper should be of good quality A_4 size with one inch margins on the top, bottom, right and left sides and articles should be typed on one side of the paper.

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Preparation of the manuscript

The text of observational and experimental article is usually (but not necessarily) divided into sections with the headings – introduction, materials and methods, results and discussion. Long articles may need subheadings within some sections (especially in methods, results and discussions) to clarify their content. Other types of articles such as case reports, review articles and editorials can be in other formats. The tittle page should be the first page of all manuscripts.

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Title page should carry
(i) Title of the article which should be concise, informative, self-explanatory and catchy.
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The format of the manuscript depends on the type of the articles, each component should begin in a new page in a sequential order and contain relevant information.

A. Original articles (Length: 2000 ± 500 words)

The following sequence of headings should be followed for original articles
(i) Abstract, (ii) Introduction, (iii) Materials and Methods, (iv) Results, (v) Discussion (with Conclusion), (vi) Acknowledgments, (vii) References.

(i) ABSTRACT

The second page should carry an abstract (of no more than 150 words for unstructured abstract or 250 words for structured abstract). Structured abstract is preferred. The abstract should state the Background or aims of the study, basic procedures/Methods (selection of study subjects; observational and analytic methods), main findings/Results (specific data and their statistical significance, if any) and the principal Conclusions. Below the abstract authors should provide/mention 3 to 10 key words or short phrases. Terms from the medical subject headings (MeSH) list of “Index Medicus” should be used: if suitable are not yet available for recently introduced terms, present terms may be used.

(ii) INTRODUCTION

Provide the wider context that generated the study. This should summarize the rationale for and purpose of the study. Give only strictly pertinent references and do not include data or conclusions form the study being reported.

(iii) MATERIALS & METHODS

This section details the study design to ensure reproducibility of the research. It will include case selection, place and time of study, sampling technique, data collection, ethical aspect and the statistics. Statistical soft wire if used should be specified. Studies that involve human subjects must be approved by an institutional ethical review committee. Mention precisely all drugs and chemicals if used including generic name (s) and route (s) of administration. Reports of randomized clinical trials should present information on all major study elements including the protocol (study population, interventions or exposures, outcomes and the rationale for statistical analysis), assignment of intervention (methods of randomization, concealment of allocation to treatment groups), and the method of masking (blinding).include case selection, place and time of study, sampling technique, data collection, ethical aspect and the statistics. Statistical soft wire if used should be specified Studies that involve human subjects must be approved by an institutional ethical

review committee. Mention precisely all drugs and chemicals if used including generic name(s) and route(s) of administration. Reports of randomized clinical trials should present information on all major study elements including the protocol (study population, interventions or exposures, outcomes and the rationale for statistical analysis), assignment of intervention (methods of randomization, concealment of allocation to treatment groups), and the method of masking (blinding).

(iv) RESULTS

Should be presented in logical sequence in the text, tables and illustrations. The order of presentation of results should parallel the order of the materials and method section. Do not repeat in the text all data in the tables or illustrations; emphasize only important observations.

a) Tables

Type or print out each table with double spacing on a separated sheet of paper, be numbered consecutively using Roman numerals in order of their first citation in the text and supply a brief title for each in the appropriate headers. Do not use internal horizontal and vertical rules. Be sure that each table is cited in the text. Place explanatory matter in foot notes not in the heading. Explain in footnotes all non-standard abbreviations that are used in each table.

b) Illustrations (Figures)

Figures include graphs, charts and photographs. Figures should be professionally drawn and photographed; freehand or type written lettering is unacceptable. Instead of original drawings, x-ray film and other materials, send sharp, glossy coloured photographic prints, usually 127 X 178 mm (5 X 7 inch) but no larger than 203 X 254 mm (8 X 10 inch). Figures should be numbered consecutively according to order in which they have been first cited in the text. Each figure should be accompanied by a legend at the bottom. Do not write on the back of the figure or scratch or mar them by using paper clips. Do not bend figures or mount them on cardboard. Written permission is needed when photographs of people are used and if person is unidentifiable then written permission is not mandatory.

(c) Units of measurement

Measurement of length, weight and volume be reported in metric units. Measurement of temperature in Celsius, blood pressure in mm of Hg. All hematological and clinical-chemistry measurements should be reported in SI units. Authors may request editors to add non-SI units before publication.

(v) DISCUSSION

Emphasize the new and important aspects of the study and conclusions that follow from them. This section should include implications of the findings and their limitation including implications for future research. The section should not merely recapitulate the results but compare and contrast the result with other relevant studies. Do not make statement on economic benefits and costs unless the manuscript includes economic data and analyses.

Conclusion

It will be a brief concluding paragraph of the heading “Discussion”, stating the implications of the study results and possible new research directions on the subject.

(vi) ACKNOLEDGEMENT (not mandatory)

Institution, organization, sponsor, individuals or any bodies may be acknowledged in the for financial, material, technical or any form of assistance or contribution to the work with their consent.

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This should cover uncommon and / or interesting cases with appropriate confirmation process. The number of case may be one or two. Case report should consist of an unstructured abstract (100± 200 words), ‘INTRODUCTION’, ‘THE CASE’ including clinical presentation, diagnosis and outcome and ‘DISCUSSION’ that includes brief review of relevant literatures, one table and not more than two figures.

C. Review articles (Length: 3000±500 words)

Submission of reviews and perspectives covering topics of current interest are encouraged. Review articles should be focused on topic of health interest and up to date. Components should include: unstructured abstract (250 ± 50 words), context, objective, data sources, study selection, data extraction, results, analysis and conclusion.

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Letters in response to articles published in Kushtia Medical College Journal are welcome. The letter will be followed by comments from original author (where appropriate) of the article in question

E. References

References should be arranged according to VANCOUVER system which is based on American National Standards Institute (ANSI) style for its database adapted by the National Library of Medicine (NLM) and used in Index Medicus. In the text references should be numbered by Arabic numeral in the superscript consecutively in the order in which they are first mention in the text. In the reference list it should be numbered sequentially as it appears in the text. Names and initials of the authors are listed if there are six or fewer, otherwise first six and then et al. is added. Authors are responsible for the accuracy of the references cited, these should be checked against original documents before the article is submitted.

Examples of references

i) Standard journal article

Vega KJ, Pina I, Krebsky B. Heart transplantation is associated with increased risk for pancreatobiliary disease. Ann Intern Med 1996; 124: 980-3.

ii) Book

Author (s)
Ringsven MK, Bond D. Gerentology and leadership skills for nurses. 2nd ed Albany (NY): Delmar publishers; 1996. p 28-35.

editor (s), compiler(s) as author (s)
Norman IJ, Redfan SI, editors. Mental health care for elderly people. 2nd ed. New York: Churchil Livingston; 1996. p 125-129.

Chapter in a book:

Philips SJ, Whisnant JP. Hypertension and stroke. In: Laragh JH, Brenner BM, editors. Hypertension: pathophysiology, diagnosis and management 2nd ed. New York: Raven press; 1995. p 465-78.

iii) Electronic material

Standard journal article on the internet.
Kaul S, Diamond GA. Good enough: a primer on the analysis and interpretation of non-inferiority trials. Ann Intern Med (internet. 2006 Jul 4 (cited 2007 Jan 4); 145(1): 662-9 Available from:
http:/www.annals.org/cgi/reprint/145/1/62.pdf.

Printed By: Siyam Offsat Press, Sapla Supar Market, Bogura.
Mobile: 01714-423706, 01733-199778, 01701-777570, e-mail: siyamoffsatprass22@gmail.com