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Journal of GANDAKI MEDICAL COLLEGE-NEPAL (J-GMC-N)

Investment in Health; how should the government think and plan?

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Healthy citizens are the pillars of national economy. Improvement of general health of the people is vital in improving the economy of a country. The government should invest in health care facilities and empower health care providers. This would enhance the people for the better access to health care to combat illnesses thus decreasing the financial burden related to health care. People would be involved more in work to increase the productivity of the country.

In recent years, the government of Nepal seems to attempt to enhance the health care sector. Under the development plans, the government has planned to ensure free basic health services and setting up health centers with at least one doctor across all local governments. Recently the government has launched insurance policy for the people. But the utility of the scheme is still in the phase of systematization. There are not adequate quality health care providers for the insured people. Only the government hospitals are allowed to initiate the treatment and they can refer to the private sectors if there are no treatment facilities in the center. This has led to concentration of the clients in those centers and are not fully satisfied with the facilities. There have been several challenges for the proper implementation of the program, including accreditation mechanisms for private providers.[1]

Although budget for health sector in Nepal is increasing in the recent years, it is still far below that of developed countries. To make a comparison, the United Kingdom spends about 10% of GDP in health sector and the United states around 16%. Whereas in Nepal, it is around four percent only. There is also problem with implementation of the planned programs and utility of allocated budget in Nepal. However, there are many countries that spend less than Nepal in health care deliveries.[2] The health care expenditure of countries varies from one to well over 10 percent of the total GDP. There are several factors for the allocation of budget for health sector including peer pressure, political economy, production function and the budgeting approaches. The government has to analyze the goal to achieve based on the approaches and determine the proper budget for the health sector.[3]

Government has to invest in the health of the people. Healthy people will generate economy to the nation by making more production and paying tax to the government. Taking this issue into consideration, many developed countries fund the health sectors and bear health care expenditures of their people. Among the OCED countries, Norway tops the list by providing the highest government fund for the total health expenditure comprising 85.2% of the expenditure government whereas in the USA it is 49.1%. The expenditure consists of the provision of preventive and curative health services, activities for family planning, nutrition and emergency aid targeted for health. It does not include the provision of water and sanitation.[4]

The government should work to minimize work related injuries. Strict regulation should be made for the compulsory use of protective equipment in the workplace. Construction of proper roads not only minimizes road traffic accidents but also provides easy access to the health care facilities when people are sick or injured and have to be taken to the hospital soon. Development of health care facilities is not the only way of making the people healthy. It is just a curative measure. The nation should strive to prevent diseases by minimizing pollution and encouraging the people to opt healthy lifestyle. There should be adequate open spaces in the cities for the facilitation of mobility of people. Parks should be constructed in the residential areas and exercise spots and equipment should be installed so that the people are encouraged to perform physical activities and get access to the facilities. Peoples republic of China has constructed public exercise spots for free in every corner of the country. People are sensitized to perform physical activities and opt healthy living. The existing government of China has worked to shift the focus of their people from luxury goods and wealth to more valuable for life: their health and has been very successful in the attempt.

In conclusion, healthy people are wealth of the nation, thus the government should do all the efforts for making the people healthy which increases the productivity and enhance the national economy.

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Management of Acute Abdomen: Acute Appendicitis

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ABSTRACT

Background: Traditionally, appendectomy has been the treatment of choice for acute appendicitis but many times diagnosis can be difficult. Clinicians are looking through different ways to come to the correct diagnosis to decrease negative appendectomy. The aim of this study was to determine relation between clinical pattern, laboratory and ultrasonography findings with histopathological report of appendectomy specimen and to evaluate the Alvarado scoring regarding its usefulness in the early diagnosis in our set up.

Methods: Prospective cross-sectional study was carried out in Gandaki Medical College Teaching Hospital and Fewa City Hospital from Jan 1, 2016 to Dec 31, 2018 on consecutively admitted patients with clinical diagnosis of acute appendicitis with study variables as demography, Alvarado score, radiological/laboratory investigations, surgical management, histopathology, and clinical outcome.

Results: Among 1021 patients (48.8% men, 51.2% women), patients with Alvarado score offive and more (967, 88.8%) had abdominal USG and some (134) with score of 5-6 (13.12%) had CT scan. On the basis which 818patients (151 patients with score 5-6 and 667 with score 7 to 10) underwent emergency appendectomy; 705 (86.19%) by open and 113 (13.81%) by laparoscopic technique. Appendicitis was suggestive per-operatively in 76.2% of patients with Alvarado score of 5-6 and 97.4% of patients with the score of 7-10. Histo-pathologically diagnosis was correct in 752 (91.9%),91.2% in open appendectomy and 96.5% in laparoscopic appendectomy cases. Only two patients had infective complication and no mortality.

Conclusion: Alvarado scoring in patients presenting with acute abdominal pain is reliable predicting tool for acute appendicitis.

Keywords:
Acute abdomen, Appendicitis, Appendectomy

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INTRODUCTION

Acute appendicitis is the most common surgical disease with a lifetime risk of 7 to 8%.[1] Appendectomy is the most commonly performed emergency operation in the world.[1,2]

Mc Burney, in 1889, had suggested early appendectomy for patients with acute appendicitis3. Three years earlier to that Fitz's had published paper advocating appendectomy for complicated (perforated) acute appendicitis.[4] Since then the general surgical practice has been to remove

the appendix when there is a question of appendicitis to prevent its common complication (perforation).

There is great variation in the presentation, severity of disease, radiological workup, and surgical management of patients with acute appendicitis. The initial management of patients with suspected appendicitis still needs to be based on the disease history, physical signs, and basic relevant laboratory tests that suggest the inflammatory response. This involves a subjective synthesis of a large amount of complex information, which relies on the surgeon's knowledge and previous experience with similar patients. So the diagnosis of acute appendicitis is often elusive and made in about 80% of cases.[5,6] In about 20% of cases, difficulty in diagnosis lead to a significant rate of negative appendectomy, which is again, loaded with lot of problems.[5] There are diagnostic modalities currently available e.g. USG, CT scan to improve the diagnosis of appendicitis but they are underused.[7,8] In many centers their availability is also inconsistent leaving clinician dependent of clinical and some laboratory parameters for the diagnosis.

Many scoring systems are devised to increase diagnostic accuracy in acute appendicitis, so as to decrease the need of potentially harmful and expensive imaging and ultimately to reduce morbidity and mortality associated with appendicitis.[9,10] Acute appendicitis grading system based on clinical presentation and imaging should be like a yard stick to provide a uniform patient stratification, and contribute in determining the favorable plan of action in treating acute appendectomy according to the grade of severity and ultimately contribute to decreased morbidity.10 Therefore, this study is conducted.

Patients and methods

This is a cross-sectional observational study performed in the department of surgery in GMCTH and FCH over a period of 36 months (January 1, 2016 – December 31, 2018). All consecutive 1021 patients admitted to surgical departments with a provisional diagnosis of acute appendicitis were included in the study.

Signs, symptoms, and laboratory findings of all the patients with abdominal pain of up to 3 days' duration were analyzed and Alvarado score was calculated for each Table 1).

Inclusion criteria: All patients with suspected clinical diagnosis of acute appendicitis, confirmed by imaging and seen by a surgeon were included in the study.

Table 1: Alvarado score for diagnosis of acute appendicitis

Features	Value allotted
Migratory pain	1
Anorexia	1
Nausea, Vomiting	1
Tender RIF	2
Rebound tenderness	1
Elevated temp	1
Leukocytosis	2
Shift of WBC to left	1

Interpretation of Alvarado score		
Score	Diagnosis	Plan of action
1 - 4	Not likely	Conservative treatment
5 - 6	Compatible	Further evaluation
7 - 8	Probable	Surgery
9 - 10	Very probable	Surgery

Exclusion criteria: Patients with recurrent pain, with other comorbid conditions and with pregnancy and other obviously diagnosable cases were not taken in the study.

The study was approved by the Human Ethical Committee at Institutional Review Board of the college.

Patients Information on the demography, disease history, clinical findings, Alvarado score, comorbidities, results of radiological and laboratory investigations were recorded and analyzed in all the 1021 patients.

Although surgeons with all levels of experience were involved, the majority of patients admitted for suspicion of appendicitis were initially evaluated by surgical medical officers with limited experience. But final evaluation and decision was made by a consultant surgeon and obviously operated by a senior surgeon.

All the patients with score 7 or more were planned for surgical management, score of 5-7 are further evaluated with USG and in few doubtful cases with CT scan of abdomen. Some of them were decided for operation and few with score of 5-6 and all the patients with the score of 1-4 were conservatively managed. Final diagnosis was confirmed by intraoperative findings and histopathological examination of the removed appendix. Findings of surgical management, clinical outcome and histopathology reports

were recorded.

Univariate analyses were performed using a chi-square test, or a Fisher's exact test, if the expected value of a cell was < 5. All tests were two-sided, and p-values of 0.05 were considered statistically significant.

Results:

Among 1021 patients enrolled in the study, there were 498 (48.78%) men and 523 (51.22%) women. Patients' age ranged from 3.5 to 83 years in male (mean 22.12 years) and 5 to 84 years in female (mean 25.93 years). Majority of the patients (69%) were in the age range between 11 and 30 (Table 2).

Table 2: Patient demographics

Patient characteristics		Enrolled Patients					
		Male	(%)	Female	(%)	Total	(%)
Total patient		498	(48.78)	523	(51.22)	1021	(100)
Operated	Total	404	(49.39)	414	(50.61)	818	(100)
	Open	350	(86.63)	335	(80.92)	705	(86.2%)
	Laparoscopic	54	(13.37)	79	(19.08)	113	(13.8%)
Age group (years)	0 - 10		52		20		72
	11- 20		168		149		317
	21- 30		99		148		247
	31- 40		35		46		81
	41- 50		28		20		48
	51- 60		11		18		29
	61- 70		6		9		14
	71- 80		3		2		5
	80 +		2		2		4

There is great variation in the presentation, severity of disease, radiological workup, and surgical management of patients having acute appendicitis. The frequency of different features was noted as mentioned below in table 3.

Table 3: Clinical and laboratory findings in operated patients (n=818)

Findings	Number (%)
Central abdomen pain shift to RLQ	696 (85%)
Right lower abdomen pain	744 (91%)
Right lower abdomen tenderness	564 (69%)
Diffuse tenderness	172 (21%)
Vomiting	425 (52%)
Temperature > 38 °C	205 (25%)
WBC > 10,000/ml	671 (82%)

Alvarado scoring was done in all 1021 patients (Table 1) and found as: Alvarado score of 1-4 in 147 (14.4%) patients,

5-6 in 207 (20.3%) patients and 7 or more in 667 (65.3%) patients. Out of 1021 patients with acute abdominal pain 917 (89.81%) patients underwent an abdominal USG and 134 (13.1%) patients further required abdominal CT scan. Remaining 104 (10.19%) patients were diagnosed acute appendicitis without help of radiological study and proceeded for surgery (Table 4).

Table 4: Patients management according to the Alvarado Score

Procedure	Alvarado score			Total	(%)
	≤ 4	5 - 6	≥ 7		
Total	147 (14.4%)	207 (20.3%)	667 (65.3%)	1021	
Not operated	147 (100%)	56 (27.0%)	0	203	(80.1%)
Operated	0	151 (73.0%)	667 (100%)	818	(19.9%)
USG done	147	207	563	917	(89.8%)
CT Scan done	0	87	47	134	(13.1%)
Radio not suggestive	147	56 (27%)	0		
Radiology suggestive	0	151 (73%)	563 (100%)		

Those patients with Alvarado score of 7 or more were operated. But for the patients with the score of 5-6 radiological findings were considered before planning the operation. Among them 56 (5.5%) were conservatively treated and 151 (14.8%) were taken for operation as suggested by the radiological findings. This way total of 818 (80.12%) patients were taken for appendectomy; 705 (86.19%) of them by open and 113 (13.81%) by laparoscopic technique. There were no specific criteria for choosing a particular technique of appendectomy, but usually by patients' choice. So radiologically negative 56 patients from Alvarado score 5-6 and all the 147 patients from score 1-4 making total of 203 (19.88%) patients were managed conservatively (Table 4). The number of patients and type of procedure according to the age group is as depicted in the table 5.

Table 5: Number of cases according to type of operation

Age groups	Operated patient			Type of procedure			
	Number			Open		Laparoscopic	
	Total	Male	Female	Male	Female	Male	Female
0 -10	72	52	20	52	20	-	-
11-20	317	168	149	168	149	25	37
21-30	247	99	148	99	148	14	20
31-40	81	35	46	35	46	6	9
41-50	48	28	20	28	20	8	5

51-60	29	11	18	11	18	1	6
61-70	15	6	9	6	9	-	2
71-80	5	3	2	3	2	-	-
80 +	4	2	2	2	2	-	-
Total	818	404	414	350	54	335	79

During operation, appendix was observed frankly inflamed in 115 out of 151 cases (76.2%) in Alvarado score 5-6 group and in 650 out of 667 cases (97.4%) in Alvarado score of seven of more group with statistically significance difference (Table 6).

Table 6: Per-operative findings of operated cases

Per-operative findings	Alvarado score	
	5 - 6	≥ 7
Total number	151 (100.%)	667 (100%)
Diseased appendix	115 (76.2%)	650 (97.4%)
Normal looking appendix	36 (23.8%)	17 (2.5%)
	p < 0.050	p < 0.001

A total of 818 (80.12%) patients underwent surgery, of which 705 (86.19%) underwent open appendectomy and 113 (13.81%) laparoscopic appendectomy (Table 5). Among open appendectomy cases some of them also had additional procedure as mentioned in table 7. Among laparoscopic appendectomy cases, two cases had to be converted to open technique because of high up position and difficulty in dissection.

Table 7: Per-operative findings of operated cases

Per-operative findings		Alvarado score		Total
		5 - 6	≥ 7	
Diseased appendix	Inflamed	76	435	511
	Gangrenous	28	114	142
	Perforated	9	76	85
	Abscess	2	25	27
	Total	115 (76.2%)	650 (97.4%)	765 (93.5%)
Normal looking appendix	Cecal pathology	2	1	3
	Ileal pathology	4	2	6
	Meckel diverticulitis	4	1	5
	Mesenteric lymphadenitis	12	8	20
	Ovarian pathology	6	3	9
	Tubal pathology	5	2	7
	Others	3	-	3
	Total	36 (24%)	17 (03%)	53 (6.5%)
Total operated cases		151	667	818

Per-operative diagnosis of appendicitis was suggestive in

76.2% of patients with Alvarado score of 5-6 and 97.4% of patients with score of 7-10. The diagnosis of acute appendicitis was histo-pathologically confirmed in 752 (91.9%) (RR=1.11, (1.07–1.14) CI 95%, p < 0.001) out of 818 operated patients, 91.2% among open appendectomy and 96.5% among laparoscopic appendectomy cases (p<0.05). Clinical diagnosis of appendicitis had a sensitivity of 0.82, a specificity of 0.95, a positive predictive value of 0.53. Clinical diagnosis of appendicitis was not supported histopathologically in 8.1% of cases. The negative appendectomy rate was 4.6% in males and 6.3% in females (p<0.05) (Table 8).

Table 8: Relation of Alvarado Score with histopathological report

Patient characteristics		Enrolled Number (1021)		Histopathology report			
				Positive	(%)	Negative	(%)
Sex	Male	498	(48.78%)	475	95.4%	23	4.6%
	Female	523	(51.22%)	490	93.7%	33	6.3%
Operation	Open	705	(86.2%)	643	91.2%	62	8.8%
	Lap	113	(13.8%)	109	96.5%	4	3.5%
Age group	0 - 10	72		65	90%	7	
	11 - 20	317		290	91%	27	
	21 - 30	247		228	92%	19	
	31 - 40	81		77	95%	4	
	41 - 50	48		46	96%	2	
	51 - 60	29		29	100%	0	
	61 - 70	15		14	93%	1	
	71 - 80	5		4	80%	1	
	80 +	4		3	75%	1	

There is great variation in the presentation, severity of disease, radiological workup, and surgical management of patients having acute appendicitis. The values of the Alvarado score are significantly higher in the patients with acute appendicitis, compared with the patients of the other diseases (Table 7). Major post-operative complications occurred in two (0.24%) patients; Pelvic abscess in one laparoscopic appendectomy patient and synergistic gangrene of right lower abdominal wall in one open appendectomy patient. Both of them recovered satisfactorily in due course of time. There was no mortality observed in the study population.

Discussion

Acute abdomen is any abdominal disease with acute onset of abdominal pain requiring immediate intervention.

Abdominal pain is often derived from digestive system diseases but may also be caused by hepato-biliary, urological, gynecological and even neurological entities; however, the incidence varies according to age and disease etiology. Therefore, appropriate primary care should be provided based on careful history taking and clinical findings. The site and characteristics of the abdominal pain, accessory symptoms (pain location, migration, sudden onset, increasing severity, accompaniment with GI bleeding, vomiting, diarrhea, or constipation) should be assessed to differentiate cases requiring emergency surgery.

Acute appendicitis is the most common surgical disease with a lifetime risk of 7–8%.[1] The lifetime risk of appendectomy is 12% for men and 25% for women, making it one of the most commonly performed emergency operation in the world.[1,2]

Epigastric pain, secondarily located in the right lower abdomen, along with tenderness is the most specific sign of acute appendicitis. Improving the diagnostic pathway is the cornerstone for decreasing the rate of negative appendectomy and other risks of wrong diagnosis. It is important to detect patients with advanced appendicitis early.

Imaging techniques (USG, CT) and diagnostic laparoscopy have been used with the hope of yielding a rapid and accurate diagnosis but diagnostic imaging performs less well in place where these facilities are considered luxury in spite of high sensitivity and specificity.[7,8] Echotomography and tomodensitometry are considered less invasive and less costly procedures, that can lead surgeons identify the appendix and confirm the diagnosis of acute appendicitis or reject. But these modality of investigations are not available everywhere. [6] The other problems with routine use of diagnostic imaging are potentially harmful ionizing radiation (CT), examiner-dependent efficacy (US), and technique-associated morbidity (diagnostic laparoscopy).[6]

In about 20% of cases, difficulty in diagnosis lead to a significant rate of negative appendectomy, which is again is loaded with lots of problems.[5] A population-based analysis11 opined similarly with the findings of clinical studies[12-14] that in about 15% of appendectomies pathologic evidence of appendicitis was not found. Unnecessary appendectomy is said to be more in women of reproductive ages, which in one study was reported to be as high as 26%.[5]

Before the wide spread use of USG and CT scans, the diagnosis of acute appendicitis was mainly based on symptoms, signs, and laboratory data. A practical score for the early diagnosis of acute appendicitis was established by Alvarado in 1986 and was assessed in this study for its accuracy in pre-operative diagnosis.[15] With the application of the Alvarado scoring system, we can decrease postoperative morbidity and mortality.[16] High score was found to be a dependable aid both in the preoperative diagnosis of acute appendicitis and in the reduction of negative appendectomy in men and children but the same was not true for women who had a high false positive rate for acute appendicitis.[16] This clinical score can correctly classify the majority of patients with suspected appendicitis, leaving the need for diagnostic imaging or diagnostic laparoscopy to the smaller group of patients with an indeterminate scoring result.[17]

Laparoscopic appendectomy is gaining popularity in the last 10-15 years among surgeons worldwide in the treatment of acute appendicitis. Because of its higher operative time, increased intra-abdominal abscess risk, and higher costs compared to open, it is not yet considered the "gold standard" in the management of acute appendicitis.[18-23]

According to literature 2 to 7% of appendicitis tends to present with complex features such as a phlegmon or peri-appendicular abscess.[23,24] They are treated conservatively followed by interval appendectomy, to reduce the risk of recurrence and risk of missing an underlying malignancy.[25,26] Overall postoperative complication rates ranged between 10-19% for uncomplicated acute appendicitis and reaching 30% in cases of complicated acute appendicitis.[15] The results of the present study confirm the clinical value of imaging techniques and prognostic scores. Appendectomy remains the most effective treatment of acute appendicitis with low mortality rate.[26]

Conclusions

There is great variation in the presentation, severity of disease, radiological workup, and surgical management of patients having acute appendicitis.[27] The results of the present study confirm the clinical value of Alvarado scoring in all cases, and imaging techniques (USG, CT scan) in doubtful cases. Conservative management of doubtful cases of acute appendicitis (Alvarado score 1-4 and radiologically not suggested cases of score of 5-6), with close monitoring. In those cases, presenting with complex

features such as a lump or peri-appendicular abscess, it is better to treat conservatively followed by interval appendectomy.

Conflict of interest

The authors declare that they have no conflict of interests.

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Comparative study of Pelvi-calyceal system and relationship of structures at hilum of kidney between Nepalese and North Americans

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ABSTRACT

Introduction: Pelvi-calyceal system consists of renal pelvis along with major and minor calyces.The minor calyces unite with their neighbors two or three chambers to form the major calyces. The major calyces drain into the infundibula. The renal pelvis is formed from the junction of the infundibula.

The common pattern of arrangement of structures at the renal hilum, antero-poteriorly is renal vein, renal artery and pelvis.

Objectives: To compare the study of pelvi-calyceal system and relationship of structures at hilum of kidney between Nepalese and North Americans.

Methodology: The gross and prosected kidney specimens were studied for pelvi-calyceal system and relationship of structures at hilum of kidney in Anatomy department. In Nepal, the study was undertaken in Gandaki Medical College, Kaski and in USA, it was done in Well-cornel University, New York.

Result: Tricalyceal major calyx were found in 63.8% in Nepalese and Bicalyceal were found in 65.6% North Americans which is statistically significant variations. The number of minor calyces and pyramids varying 6 in Nepalese and 9 in North Americans were also statistically significant($p < 0.05$). The arrangement of structures at hilum of kidney from anterior to posterior(renal vein, artery and pelvis) in Nepalese and North American kidneys was 86.1% and 62.5% respectively whereas the structures arranged as renal artery, vein and pelvis from anterior to posterior was 13.9% and 37.5% .

Conclusion: There is significant variations in pelvicalyceal system and relations of structures at hilum of kidneys of Nepalese and North-Americans.

Keywords

pelvicalyceal , structures and hilum of Kidney

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INTRODUCTION

Pelvi-calyceal system consists of renal pelvis along with major and minor calyces.[1,2] On coronal section, the kidney has an outer cortex and an inner medulla. The cortex extends centrally as the columns and separate the medulla into pyramids. The apical portion of the pyramids

protruding into the minor calyces is known as papilla.[3,4] The minor calyces unite with their neighbors two or three chambers to form the major calyces. The major calyces drain into the infundibula.[4,5] The renal pelvis is formed from the junction of the infundibula. The minor calyces, the major calyces, the infundibula, and the renal pelvis are collectively known asintrarenal collecting system.[6] Variations in the gross anatomy of the renal collecting system are probably as numerous as that of individual's fingerprints.[7]

The Kidney is a retroperitoneal organ which is supplied by single renal artery and drained by single vein.[8,9] The renal artery arises laterally from the aorta just below the origin of the superior mesenteric artery. The right renal artery (RRA) is longer and often higher, passing behind the inferior vena cava (IVC) and right renal vein. The left renal artery is a little lower and passes posterior to the left renal vein. In 70% of individuals, a single renal artery to each kidney is present. Accessory renal arteries are common in 30% of individuals, and usually branch from the aorta above or below (most commonly below) the main renal artery and follow it to the renal hilum.[10,11] Accessory renal arteries may also enter the kidneys directly, usually into the upper or lower poles. Accessory renal artery to the lower pole (polar renal artery) may cross anterior to the ureter and obstruct it, causing hydronephrosis. If the artery enters to the lower pole of the right kidney, it usually crosses anterior to the IVC and ureter. They are considered as persistent embryonic lateral splanchnic arteries. It is important to be aware that accessory renal arteries are end arteries; consequently if an accessory renal artery is damaged or ligated, the part of the kidney supplied by it is likely to become ischemic. Accessory renal arteries are about twice as common as accessory veins.[12]

The large renal veins lie infront of the renal arteries and open into the inferior vena cava almost at right angles. The left renal vein is three times of the rightvein in length (7.5 cm and 2.5 cm). The left renal vein may be double, one vein passing posterior, the other anterior to the aorta before joining the inferior vena cava. The right renal vein is posterior to the descending part of duodenum.[13]

In the standard anatomical texts, the arrangement of structures at the renal hilum, antero-poteriorly as described is: renal vein, renal artery and pelvis.

Rationale of study:

Since there is variation in arrangement of structure

present at hilum of kidney and pelvi-calyceal system,the present study was performed to compare pelvi-calyceal system and relation of structures present at hilum of kidney between Nepalese and North Americans.

Importance of Study:

The present study will be useful for uro-surgeons while doing surgery of kidney even for transplant surgery of kidney; for radiologists while carrying out pyelography; for anatomists to study variations of structures at hilum and within the kidney.

OBJECTIVES

I.   To compare the study of pelvi-calyceal system between Nepalese and North Americans.

II.   To compare the study of relationship of structures at hilum of kidney between Nepalese and North Americans.

Methodology

The prosected kidney specimens were studied in Anatomy department. In Nepal, the study was undertaken in Gandaki Medical College, Kaski from December 2013 to December 2018 and in USA, it was done in Well-cornel University, New York from May 2016 to April 2019.

Ethical consideration

There were no ethical issues in present research because research was carried out on dead prosected specimens of kidneys. Ethical approval was obtained from institutional ethical committee of concerned institute.

Sampling method, sample size and study procedure

Convenience sampling method was adopted. All available kidneys during study period in Anatomy department of Gandaki Medical College and well-cornel University, Newyork were studied.

For study of renal pelvi-calyceal system: 36 kidneys (18 left and 18 right sided) were studied in Nepal and 32 kidneys (16 left and 16 right sided) were studied in US. The kidneys were dissected coronally and number of major calyces, minor calyces and pyramids were counted and noted down.

For the study of the relationship of structures at hilum of

kidney, Gross, prosected kidney specimens of 36 kidneys (18 left and 18 right sided) were studied in Nepal where as 24 (12L, 12R)in US. The renal vein, artery and pelvis were observed in hilum and their antero-posterior relations were noted down.

Reliability and validity of research

To ensure good reliability and validity of research inter-observer bias was eliminated There was 95% observed agreement(Cohen's kappa value 0.95)

Statistical analysis

Data were entered in excel sheet and analysis were performed using SPSS 16.0. Percentage was calculated . The chi-square test was applied to test the significant difference of variations between Nepalese and North American kidneys. A 95% confidence interval was set to observe the difference(p value <0.05 as significant).

RESULT

Coronally dissected 36 kidneys (18 left and 18 right sided) were studied in Nepal and 32 kidneys (16 left and 16 right sided) were studied in United States.

Pattern of major calyces were studied and their number was noted down. The statistical result in terms of percentage has been presented in table 1 below:

Table1: Distribution of major calyces in Nepalese and North American kidneys

S.N	Major calyces types	In Nepalese kidney(n=36)	In North American kidney(n=32)	Pvalue
	Monocalyceal	0%(n=0)	0%(n=0)	0.0
	Bicalyceal	33.3%(n=12)	65.6%(n=21)	0.02*
	Tricalyceal	63.8%(n=23)	31.2%(n=10)	0.02*
	Quadricalyceal	2.8%(n=1)	3.1%(n=1)	0.06

* statistically significant.

In Nepalese kidney, 63.8% were tricalyceal followed by 33.3%, 2.8% and 0% bicalyceal, quadricalyceal and monocalyceal respectively. Similary, 65.6%, 31.2%, 3.1% and 0% were bicalyceal, tricalyceal, quadricalyceal and monocalyceal in North American kidneys respectively. The bicalyceal and tricalyceal pattern showed significant difference between Nepalese and North American kidneys.

Number of minor calyces were counted and noted down. The statistical result in terms of percentage has been presented in table 2 below:

Table 2: Distribution of minor calyces in Nepalese and North American kidneys

S.N	No. of minor calyces	In Nepalese kidney(n=36)	In North American kidney(n=32)	P value
	4	11.1%(n=4)	0%(n=0)	0.06
	5	22.2%(n=8)	0%(n=0)	0.05
	6	61.1%(n=22)	0%(n=0)	0.01*
	7	2.8%(n=1)	9.3%(n=3)	0.07
	8	2.8%(n=1)	25%(n=8)	0.05
	9	0%(n=0)	46.8%(n=15)	0.03*
	10	0%(n=0)	12.5%(n=4)	0.05
	11	0%(n=0)	6.25%(n=2)	0.08

* statistically significant.

In 61.1%, 22.2%, 11.1%, 2.8%, 2.8% Nepalese kidney, number of minor calyces were found to be 6,5,4,7 and 8 respectively and in 46.8%, 25%, 12.5%, 9.3% and 6.25% North American kidneys, number of minor calyces were found to be 9,8,10,7 and 11 respectively.

The distribution of only six and nine numbers of minor calyces showed significant difference between Nepalese and North American kidneys.

Number of pyramids were countedand noted down. The statistical result in terms of percentage has been presented in table 3 below:

Table3: Distribution of pyramids in Nepalese and North American kidneys

S.N	No. pyramids	In Nepalese kidney(n=36)	In North American kidney(n=32)	P value
	4	11.1%(n=4)	0%(n=0)	0.06
	5	22.2%(n=8)	0%(n=0)	0.05
	6	61.1%(n=22)	0%(n=0)	0.01*
	7	2.8%(n=1)	9.3%(n=3)	0.07
	8	2.8%(n=1)	25%(n=8)	0.05
	9	0%(n=0)	46.8%(n=15)	0.03*
	10	0%(n=0)	12.5%(n=4)	0.05
	11	0%(n=0)	6.25%(n=2)	0.08

* statistically significant.

In 61.1%, 22.2%,11.1%, 2.8% and 2.8% Nepalese kidneys, number of pyramids was found to be 6,5,4,7 and 8. Similarly, in 46.8%, 25%, 12.5%, 9.3%, 6.25% North American kidneys, number of pyramids was found to be 9,8,10,7 and 11 and respectively.

The distribution of only six and nine numbers of pyramids showed significant difference between Nepalese and North American kidneys.

The antero-posterior relations of structures at hilum of kidney were studied and pattern of relationship were noted down. The statistical result in terms of percentage has been presented in table 4 below:

Table 4: Showing the comparison of relation of structures at hilum of kidney between Nepalese and North Americans

S.N	Relation of structures at hilum (from anterior to posterior)	In Nepalese kidney(n=36)	In North American kidney(n=32)	P value
	Renal vein, artery and pelvis	86.1%(n=31)	62.5%(n=20)	0.05
	Renal artery, vein and pelvis	13.9%(n=5)	37.5% (n=12)	0.05

In 86.1% Nepalese kidney and in 62.5% North American kidneys, relation of structures at hilum (from anterior to posterior) Renal vein, artery and pelvis was respectively and in 13.9% Nepalese kidney and in 37.5% North American kidneys, relation of structures at hilum (from anterior to posterior) Renal artery, vein and pelvis was respectively.

DISCUSSION

Renal minor calyces are cup shaped structures which are present at the apices of the pyramids. There are minor calyces and major calyces. Many papillary ducts open at the apex of the pyramid which is formed by the union of many collecting ducts. The minor calyces are the cup like dilatations seen at the apex of one or more pyramids. Therefore, the number of minor calyces do not correspond the number of pyramids. Minor calyces join to form 2 to 3 major calyces.[14]

In the standard anatomical texts, the arrangement of structures at the renal hilum, antero-poteriorly as described is: renal vein, renal artery and pelvis. In some cases, posterior division of renal artery and posterior tributary of renal vein might be seen entering posterior to pelvis.[15] The present study aimed to compare pelvicalyceal system and structures present at hilum of kidney between Nepalese and North Americans.

In present study, the number of minor calyces varies from 4 to 11 and most often 6 minor calyces were present in Nepalese kidney and 9 minor calyces were present in North American kidney. Wadekar[16] reported that the numbers of minor calyces were 5 to 11 (most often 8). Supriya et al.[17] found that in right kidney, number of minor calyces varies from 2 to10 and average of 6 and from 3-9 in left kidney with average of 6. Similarly, Ningthoujam et al[18] stated that the numbers of minor calyces were 6 to 12 and 9 were most often reported.

Wadekar et al.[16] reported the number of major calyces varies from 2 to 3 and two major calyces were present in 60%. Similarly, in the present study, the number of major calyces ranges from 2 to 4. In Nepalese kidney, 3 major calyces were found in 63.8% and 2 major calyces were found in 65.6% North American kidney. Major calyces varying from 1 to 5 in right and left kidney were reported on a study by Supriya et al.[17]

In our present study, 4 to 11 numbers of pyramids were reported and in 61.1% Nepalese kidney, the number of pyramids were 6 and 9 pyramids were noted in 46.8% North American kidney. The study conducted by Supriya et al.[17] mentioned that number of pyramids varies from 6 to 18 and 6 to 13 with average of 10 and 9 in right and left kidney respectively.

In the present study, relation of structures at hilum of kidney from anterior to posterior was renal vein, artery and pelvis in 86.1% and 62.5%, Nepalese and North American kidneys respectively. And in 13.9% Nepalese kidney and 37.5% North American kidney, the relation of structure was renal artery, vein and pelvis from anterior to posterior. Trivedi et al[15] found that in majority (73%), the arrangement was not according to common pattern of arrangement i.e. renal vein, renal artery and pelvis arranged antero-posteriorly. In 31% anterior division of renal artery was seen in front of renal vein at the hilum, whereas, in 50% cases the pelvis was not the posterior most relation. Supriya et al.[17] reported common pattern of hilar arrangement in 66% and 70% in right and left kidney where as 34% and 30% cases showed variation pattern in right and left kidneys respectively. Sinha et al[19] found that in majority, the arrangement was according common pattern of arrangement i.e. renal vein, renal artery and renal pelvis arranged antero-posteriorly. In 5% of cases renal artery was seen in front of renal vein and renal pelvis at the hilum.

The present study has useful implications. While doing surgeries of kidneys like nephrectomy, transplant

surgeries of kidney the relationship of structures at hilum and their variations should be well known to urosurgeons otherwise urosurgeons will face lots of problems during operation. The radiologists should be aware of calyceal system of kidneys and their variations while carrying out pyelography otherwise radiologists may encounter problems while interpretating pyelogram. Anatomists also should be well aware of the relationship of structures at hilum and their variations and calyceal system of kidneys and their variations while teaching medical students.

Limitations of study

This study is a small contribution with small sample size of kidneys, however what were available were studied. The similar studies should be done in other parts of world and metaanalysis should be carried out in future.

CONCLUSION

The distribution of major calyces showed significant difference (p<0.05) between Nepalese and North American kidneys. In Nepalese kidney, 3 major calyces (Tricalyceal) were found in 63.8% and 2 major calyces (Bicalyceal) were found in 65.6% North American kidney. The number of minor calyces and pyramids varying 6 and 9 were also statistically significant (p<0.05) between Nepalese and North American kidneys respectively. The arrangement of structures at hilum of kidney from anterior to posterior(renal vein, artery and pelvis) in Nepalese and North American kidneys was 86.1% and 62.5% respectively whereas the structures arranged as renal artery, vein and pelvis from anterior to posterior was 13.9% and 37.5% in Nepalese and North American kidneys respectively.

Conflict of interest: none

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LEGENDS:
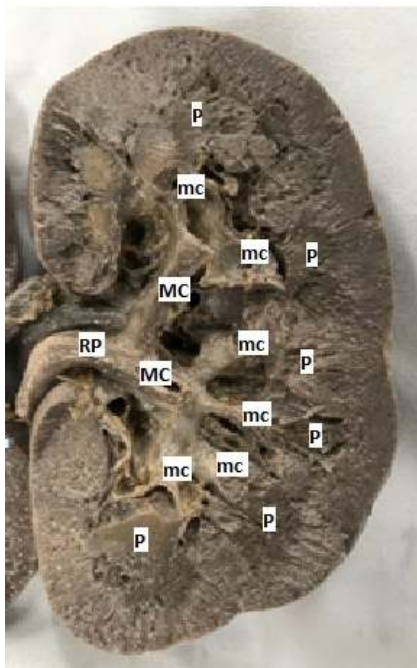
Figure 1: The coronal section of kidney showing bicalyceal pattern of pelvi-calyceal system.

P- pyramid, mc- minor calyx, MC- major calyx, RP- renal pelvis.

Figure 3: The coronal section of kidney showing quadricalyceal pattern of pelvi-calyceal system.

P- pyramid, mc- minor calyx, MC- major calyx, RP- renal pelvis, RA- renal artery, RV- renal vein.
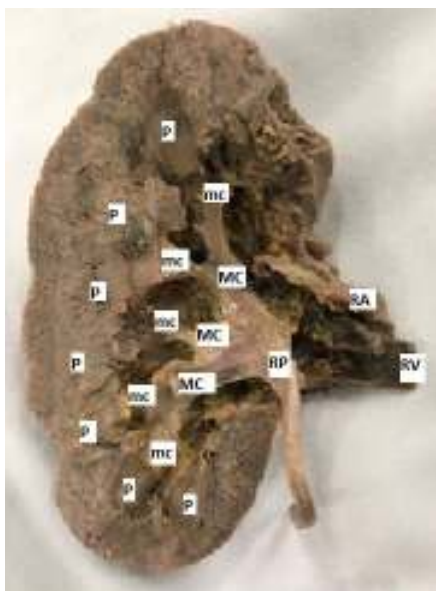
Figure 2: The coronal section of kidney showing tricalyceal pattern of pelvi-calyceal system.

P- pyramid, mc- minor calyx, MC- major calyx, RP- renal pelvis, RA- renal artery, RV- renal vein.
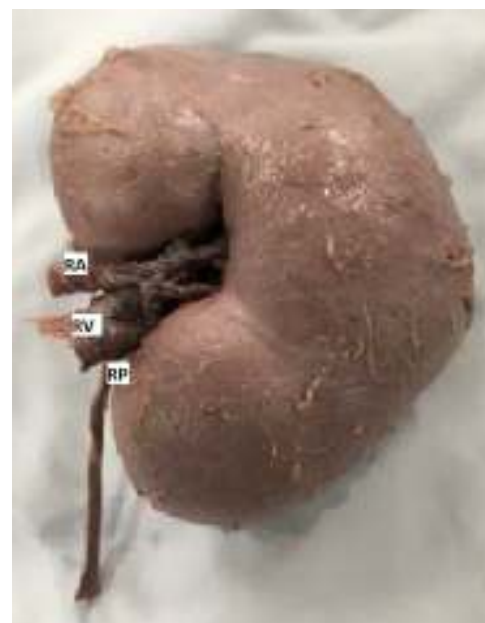
Figure 4: Anterior surface of kidney showing the relations of structures at hilum; renal artery, renal vein and renal pelvis from anterior to posterior.

RP- renal pelvis, RA- renal artery, RV- renal vein.

Knowledge of Radiation Exposure and it Risk among Radiographers and Radio Technologists

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ABSTRACT

Objective: The aim of this study was to assess the awareness, concern and practice on hazards of ionizing radiation and radiation protection among radiographers and technologists of Pokhara, Nepal and to evaluate the knowledge of radiation and its protection among them.

Materials and Methods: A validated questionnaire was used to collect data from radiographers and Technologists. The survey included multiple choice questions (MCQs) related to demographic characteristics (age, gender), academic qualification, and knowledge of radiation and radiation protection. Obtained data were analyzed using Statistical Package for Social Science (SPSS) version 25 software and shown in frequency, percentages.

Results: Among 103 participants, only 73.8% were NHPC registered and 46.7% had attended classes/seminar on the topic of radiation protection. Only 8.7% used dosimeters to measure the radiation dose. Among participants, 77.7% knew that annual whole-body dose for a radiation worker is 20 mSv and 87.4% knew that there should be distance of more than six feet from the X-ray tube while taking X-ray in the case of non-barrier protection. This study shows that the knowledge and the perceptions regarding radiation and its protection among the radiographers/technologist is just satisfactory and needs to be improved.

Conclusion: Overall awareness and knowledge of radiation protection and radiological procedures of radiologic technologist were satisfactory. However, there were some question that they needed mandatory training and knowledge. Therefore, we recommend that further workshops, seminars, symposium, training courses and Continuing Medical Education (CME) programs are recommended on a regular basis in collaboration with ISSRT and other national and international organizations to raise the level of radiation awareness.

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INTRODUCTION

Radiation has always been present in our environment; however, mankind was not directly aware of its existence until the end of the 19th century, when flurries of scientific discoveries were made.[1]

The use of radiation has become an inevitable part of human life.[2] They receive 19.7% (0.6mSv) of radiation from medial usage. Radiation technology not only facilitates medial management, but also causes severe adverse effects.[3] Although all medical interventions have potential benefits, but it's potential risks should not be ignored.

Ionizing radiation in medical imaging is one of the powerful diagnostic tools in medicine.[4] In addition, it has been identified that radiography personnel often do not have sufficient knowledge about the risks posed by x-ray exposure and the measures that should be taken to mitigate those risks. The knowledge and practice of radiology professionals regarding harmful biological effects of ionizing radiation and radiation safety must be addressed.

Multiple international organizations have set standard guideline, and tasks to minimize the radiation and its hazards. Since the discovery of x-rays by Roentgen, its knowledge and safe operation has been drawing attention. Many radiology professionals still ignore as x-rays do not cause immediate severe adverse effects.[5]

Till date there are handful of studies done in context of Nepal regarding radiation exposure knowledge and its risk. The main goal behind this survey-based study was to obtain a better understating of current status of knowledge and awareness of radiation protection, the need for safe practices among radiology professionals and to compare the data with international literatures.

METHODS

A questionnaire survey was performed to provide a snapshot of knowledge and awareness of radiation dose and risks associated with medical imaging among radiology professionals' radiographers/technologists.

The survey included questions regarding demographic characteristics (Age, gender), academic qualification and whether council registered or non- registered practice. Nineteen multiple choice questions were developed according to most recent up to date references. Questions were regarding general knowledge in relation to radiation, radiation protection, safety, health risks, dose imparted in radiological examination.

The study was conducted for the period of three months from September to November 2018 at various hospitals and diagnostic centers in Pokhara, Nepal. Participants were handed out the hard copy survey by the author himself and are requested to complete within 20 minutes after giving informed consent to participate in survey. They handed the completed survey and they were not allowed to discuss and ask any thing regarding the content of the form. Each correct answer was given 1 score and for negative answers, there was no negative markings.

Specific data collection tools were used to get required information. The study was a descriptive cross-sectional study to get maximum output in short time. Descriptive statistics was used to analyze data. Average score, standard deviation and percentages were calculated. Percentages were calculated for individual questions and different categories of questions using SPSS v25 and Microsoft Excel 2013.

Informed consent was taken from each participant and an approval was obtained from ethical committee of Gandaki Medical College Teaching Hospital and Research Centre, Pokhara, Nepal.

RESULTS

Of total 103 participants, 55/103 (53.4%) were males and 48/103 (46.6%) were females with age ranging from 18 to 49 years, mean age of 33.5 years. They had undergone some related trainings, CTEVT diploma course, Bachelor's degree and Master's degree in the Medical Imaging Technology. Among 103 participants seven (6.8%) had related trainings, 88 (85.4%) were CTEVT diploma holders, five (4.9%) had bachelor's degree and three (2.9%) had master's degree. Study shows that only 76/103 (73.8%) had NHPC (Nepal Health Professional Council) registration and 27/103 (26.2%) had no NHPC registration. All the 103 participants were working in the different modalities, x-ray technicians/technologists were 83 (80.6%), 13 (12.6%) were working as CT technicians/ technologists, one (1%) as MRI technologist and six (5.8%) were working in the specific modalities like OPG, mammography, radio therapy etc. The demographic characteristics of participants are illustrated in the Table 1.

Table 1: The demographic characteristics of participants (n=103)

Particulars	Frequency	Percentage
Gender		
Males	55	53.4%
Females	48	46.6%
Age in years		
18-29	92	89.3%
30-39	6	5.8%
40-49	5	4.9%
50-59	0	0%
60+	0	0%
Academic Qualification		
Related trainings	7	6.8%
CTEVT diploma	88	85.4%
Bachelor's degree	5	4.9%
Master's degree	3	2.95
NHPC registration		
Yes	76	73.8%
No	27	26.2%

When 103 participants were made to choose their current knowledge regarding X-ray radiation and its effect on humans on a scale from 1 to 6, 3/103 (2.9%) marked 1, 22/103 (21.4%) marked 2, 58/103 (56.3%) marked 3, 11/103 (10.7%) marked 4, 6/103 (5.8%) marked 5, 3/103 (2.9%) marked 6. The score 1 was referred as inadequate whereas 6 was referred as very good. When they were asked whether they think that they have the need to know more about X-ray radiation effects 82/103 (79.6%) said yes, 4/103 (3.9%) said no and 17/103 (16.5%) said may be.

Among 103 participants, 13/103 (12.6%) marked that they were exposed to radiation several times a day, 55/103 (53.4%) marked several times a week, 34/103 (33.0%) marked several times a month and 1/103 (1.0%) marked he/she was never exposed to the radiation.

Among 103 participants, 46/103 (44.7%) participants had attended classes/seminar on the topic of radiation protection. All 103/103 (100%) knew the options to reduce radiation expose to the patient, i.e. time of exposure, distance from the source and shielding, and 94/103 (91.3%) of participants knew about ALARA, however only 9/103 (8.7%) didn't have knowledge about it. Maximum number of participants, 101/103 (98.1%) gave the correct answer that maximum radiation occurs from CT but not from USG, MRI and X-ray.

Unfortunately, only 9/103 (8.7%) had used dosimeter to measure the radiation dose while 94/103 (91.3%) had not used it to measure the radiation dose. However 80/103(77%) knew the annual whole-body dose for radiation for worker was 20 mSv.

Among 103 participants 94/103 (91.3%) make their patient wear lead apron if needed during examination while 9/103 (8.8%) do not make their patient wear lead apron if need during examination. Only 90/103 (87.4%) of the participants chose the correct distance which is >6 feet from the X-ray tube that an operator should stand during exposure in the case of non-barrier protection.

Among 103 participants 94/103 (91.3%) do X-ray/CT during pregnancy but in the case of emergency using radiation protection principles while 8/103 (7.8%) said they don't perform X-ray/CT during emergency, also 1/103 would perform it.

For the question how often their equipment was calibrated, 14/103 (13.6%) marked periodically, 44/103 (42.7%) marked in the case of necessity, 39/103 (37.9%) marked that they do not have idea about it and 6/103 (5.8%) marked that never.

The opinions, perceptions and correct answers varied among the participants. The question numbers 10, 11, 12, 14, 16, 19 were designed to test the knowledge and had to be correctly answered. The response to those questions are shown in the Table 2.

Table 2: The response to question numbers 10, 11, 12, 14, 16, 19

Q no.	Questions	Frequency of correct answer	Percentage
10	Which of the following options are used to reduce radiation exposure to patient?	103	100%
11	What do you mean by ALARA?	94	91.3%

12	Maximum radiation exposure may occur in:	101	98.1%
14	What is the annual whole body dose for aradiation worker?	80	77.7%
16	At what distance from x-ray tube operator should stand during exposure in the case of Non barrier protection?	90	87.4%
19	Which of the modality uses non ionizing radiation?	96	93.2%

The mean score in the percentage of the six questions was 80.6% among the whole participants. This indicate good level of knowledge among the radiographers/technologists and future radiography professionals.

DISCUSSION

Radiology examinations have an essential role in diagnosis. Radiation has been demonstrated to have adverse biological effects that vary by the duration of exposure and dose[6],which has shown an increased occurrence of cancer, shortening of longevity, birth defects, and cataracts[7].The main principles for radiation protection are time, distance, and shielding[8],which should be carefully controlled. In order to use reduce these adverse effects, adequate awareness of possible risks of x-rays, safety precautions and issues relating dose optimization are essential to protect patient and oneself from unnecessary x-ray exposure. It is the prime responsibility of a radiographer to provide radiation safety to the patient undergoing different types of radiological procedures and processes.[9] Occupational radiation protection is necessity whenever radiation is used in the practice of medicine.

According to this research participants holding different degrees like M.Sc., B.Sc. and Diploma have been working in radiology field. Few participants were found to have only related trainings and without NHPC registration. Knowledge level of the participants holding Master's and Bachelor's level was higher than others. As similar to the research conducted by Shah Abdul Saeed et al,[10] this study also concludes that Educational background and duration of experience in the medical radiation science profession affects the awareness levels.

Bhatt CR et al[11]shows that majority of the facilities performing high dose procedures, like catheterization, angiography and intestinal barium procedures did not offer personal dosimetry for the involved personnel. Similarly, our study shows that only 8.7% radiographers/ radio technologist use dosimeter for such procedures. There are a handful number of personnel being monitored with personal dosimetry. There are no regulatory dose limits for occupationally exposed staff. Thus, there is an urgent need to establish a national radiation protection authority to regulate the use of radiation in Nepal.

The study shows that 44.7% of the participants have attended classes/seminars on the topic of radiation protection. A similar study by Paolicchi F etal[12] showed only 12.1% participants attended radiation protection courses on a regular basis. Despite 90% of radiographers stating to have sufficient awareness of radiation protection issues, most of them underestimated the radiation dose of almost all radiological procedures which shows similarity to our study. It also concludes a similar conclusion to our study that there is a substantial need for radiographers to improve their awareness of radiation protection issues and their knowledge of radiological procedures. Specific actions such as regular training courses for both undergraduate and postgraduate students as well as for working radiographers must be considered in order to assure patient safety during radiological examinations. Also, the research done by faculty member of Brigand University of Medical Sciences in Iran,[13] gives a conclusion similar to our study that the content relevant to radiation and radioactive hazards in medical curriculum should be revised, including quantitative and qualitative aspects of the subject. A reasonable step to more effective education regarding radiation and relevant issues is to integrate safety practices in clinical courses as the knowledge regarding radiation and its protection among radiographers and radio technologist is just satisfactory.

In this research we have seen that protection equipment's are either unavailable or they are not being used due to negligence. Research conducted by Jafar Fatahiet al[14] concludes that the present study confirms the need to highlight protection and safety principles in the departments of Radiology to ensure the safety of radiographers and patients. In this regard, supplying protection equipment and holding courses on radiation protection are useful. Hence supply of the protection equipment and courses on radiation protection is must in the Pokhara, Nepal too.

There are professional organizations namely Nepal Radiological Society (NRS), Nepal Radiologist's Association (NRA) and Nepalese Association of Medical

Physicist (NAMP). NRS, affiliated with ISRRT was established in 1990 AD. It represents radiologist, radiologic technologist, radiation therapist, medical physicist and radiographers. Though NRS conducts annual conferences, workshops and seminars, these are insufficient to disseminate the knowledge to wider audience all across the country. Therefore, further workshops, seminars, symposium, training courses and Continuing Medical Education (CME) programs are recommended on a regular basis in collaboration with ISSRT and other national and international organizations to raise the level of radiation awareness. In Nepal, radiographers are registered under Nepal Health Professional Council (NHPC), established in 1997 AD. It is also a prime task of these councils to educate all the technical professionals and doctors properly. They should act in the front for the systemic and continuous delivery of educational training programs.

CONCLUSION

According to this study, perception of radiation exposure and risk among radiographers/radio technologist in Pokhara, Nepalis just satisfactory. So, I could suggest that further workshops, seminars, symposium, training courses and continuing medical education (CME) programs are recommended on a regular basis in collaboration with ISSRT and other national and international organizations to raise the level of radiation awareness. Also, the theories under the curriculum are to be up to date and are to be revised periodically and should be practiced during the occupation as per theory taught in the concerned curriculum and trainings/seminars.

Limitations and recommendations

The sample size was small for the generalization to the whole country/region. The time limitation may have affected the answers and the opinion of the participants. It is highly recommended that further more similar studies be carried out with larger sample size for more accuracy and take necessary steps to raise the level of radiation awareness.

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Dental Awareness, Knowledge and Attitude among the Medical Practitioners in Pokhara, Nepal

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ABSTRACT

Introduction: Oral health is a window to our overall health. Negligence to oral health might have adverse effects on the general well being of a person. Hence, early detection and prompt treatment is of utmost importance. Lack of general medical practitioner's knowledge of oral disease has been shown to contribute to delays in referral and treatment, thus significantly affecting the associated morbidity and mortality.

Methods: The present study was undertaken to assess knowledge, attitude and dental awareness among medical practitioners in Pokhara, Nepal. A list of medical practitioners was obtained from the NMA (Nepal Medical Association, Gandaki branch, Nepal) and sample size of 109 study subjects was calculated. A cross-sectional study was conducted among the medical practitioners. from March 2018 to April 2018. The data pertaining to their knowledge, attitude and awareness about oral health was gathered using a self-administered questionnaire. The data was analyzed using descriptive statistics.

Results: Results of the study showed that the medical practitioners had moderate to good knowledge about dentistry as 97.2% of the medical practitioners answered correctly saying that brushing tooth daily prevents tooth decay and periodontal disease Whereas, when asked about the changes in the oral cavity which most commonly is associated with progression towards oral cancer, only 46.8% answered correctly by responding to non-healing ulcer/ erosive lesions.

Conclusions: It is imperative that the dental/medical practitioners have good knowledge about the oral diseases and its systemic manifestations, so as to have timely referral and early treatment to prevent the associated morbidity and mortality.

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INTRODUCTION

Oral diseases and conditions are widely prevalent and are costly to treat, mainly because these diseases remain asymptomatic and chronic until they have reached an advanced stage. Also, there are several systemic diseases with oral manifestations, many of which manifest earlier than their systemic counterparts. This makes a routine oral examination an extremely important and a viable area for the early detection and the treatment of a gamut of oral and non-oral diseases.[1] Inspection of the oral cavity by a doctor has been accepted as a part of the physical examination for over a century, and if it is done on a routine basis, it can considerably reduce the morbidity and mortality which result from oral disease.[2] However, dental knowledge of qualified medical practitioners is different when compared to the general public. Even though they are qualified in the medical faculty their

knowledge about dental diseases, relationship of oral health with systemic diseases and life threatening dental diseases are scarce.[3] Hence, the present study seeks to assess the dental knowledge, attitudes and awareness of different medical practitioners in Pokhara, Nepal towards the systemic conditions affecting oral health.

MATERIAL AND METHODS

A cross sectional questionnaire survey was carried out to assess the knowledge, attitude and awareness of Medical Practitioners of Pokhara, Nepal. A list of medical practitioners was obtained from the NMA (Nepal Medical Association, Gandaki branch, Nepal). A sample size of 109 study subjects was obtained. The practitioners with MBBS degree/MBBS degree along with higher specialization (MD/MS/DM/Mch) were included. The duration of the study spanned over a period of two months from March 2018 to April 2018. A specially designed questionnaire (pretested questionnaire)[4] consisting of three sections was used, which consisted of firstly questions based on the dental knowledge of medical practitioners which included five questions, secondly section based on the attitude of the medical practitioners towards dental health, which included eight questions and the last section was based on the awareness of the medical practitioners regarding the significance of systemic conditions related to oral health, which comprised of nine questions.[4] The medical practitioners were approached personally and the purpose of the study was explained along with handing over of the questionnaire. It was also mentioned that responses would remain confidential. The questionnaires were collected personally.

Data obtained was analyzed using the SPSS (Statistical package for social sciences) version 15.

Ethical consideration: Ethical approval was taken from the Institutional Ethical Committee, Gandaki Medical College dated 8th February 2018 with ref. no.08-02-2018.

RESULTS

Table 1: Distribution of study subjects by gender

Gender	Frequency/Percentage
Males	70 (64.2%)
Females	39 (35.8%)
Total	109 (100%)

Table 2: Years of experience of participants

Years of experience	Frequency/Percentage
0-5 (years of experience)	32 (29.4%)
5-10 (years of experience)	77 (70.6%)
Total	109 (100%)

Table 3: Response based on their dental knowledge

Questions on dental knowledge			Frequency/Per-centage
Brushing teeth daily prevents	a.	Oral cancer	1 (0.9%)
	b.	Oral ulcer	2 (1.8%)
	c.	Tooth decay and periodontal disease	106 (97.2%)
	d.	Proclination of teeth	0
Important factors causing tooth decay (Dental caries)	a.	Brushing once a day	3 (2.8%)
	b.	Using tooth powder	2 (1.8%)
	c.	Sugar contained foods consumed per day	94 (86.2%)
	d.	Smoking	10 (9.2%)
Factors responsible for gingival/peri-odontal disease	a.	Dental caries	12 (11.0%)
	b.	Plaque and calculus	93 (85.3%)
	c.	Teeth with frac-tured restoration	3 (2.8%)
	d.	Inflammation of the tongue	1 (0.9%)
Specialty in dentistry	a.	Lasodontics	0
	b.	Endodontics	103 (94.5%)
	c.	Hypodontics	2 (1.8%)
	d.	Ododontics	4 (3.7%)
Does scaling have any adverse effects on teeth?	a.	Thinning of tooth	14 (12.8%)
	b.	Increase in in-ter-dental space	4 (3.7%)
	c.	Increase in mobility of teeth	6 (5.5%)
	d.	Cause tooth sensitivity	85 (78.0%)

Table 4: Response based on attitudes towards dental health

Questions on Attitude to dental health		Frequency/Per-centage
How many times a patient should be advised to brush his/her teeth (including the medical practi-tioners)	a. Once daily (tooth paste/gel)	22 (20.2%)
	b. Twice daily (tooth paste/gel)	87 (79.8%)
Does the doctor smoke or consumes tobacco in smokeless form	a. Yes	18 (16.5%)
	b. No	91 (83.5%)
In how much duration should the patients visiting the medical doctors advise to visit the dentist?	a. At least once in 6 months	98 (89.9%)
	b. Once in 2 months	1 (0.9%)
	c. Only if in pain	2 (1.8%)
	d. Once in every 2-5 years	8 (7.7%)

Patient with a dental abscess	a. Refer the patient to dentist	102 (93.6%)
	b. Prescribe antibiotics and analgesics	7 (6.4%)
	c. Ignore	0
Does dental treatment improve quality of life?	a. Yes	100 (100%)
	b. No	0
Do pregnant women need dental check –up?	a. Yes	100 (100%)
	b. No	0
Advise periodic dental care for pediatric patients	a. Yes	107 (98.2%)
	b. No	2 (1.8%)
Should the medical doctors examine the oral mucosa of the patients visiting them	a. Yes	94 (86.2%)
	b. No	15 (13.8%)

Table 5: Response of awareness on systemic conditions related to oral health due to dental diseases/ infections

Questions on Awareness of systemic conditions related to oral health		Frequency/Percentage
Ludwig's angina is a	a. Cardiac disease	14 (12.8%)
	b. Venous disease	0
	c. Renal disease	0
	d. Dental space infection	95 (87.2%)
Life threatening situation due to untreated dental infection	a. Cavernous thrombosis	100 (91.7%)
	b. Hodgkin's lymphoma	7 (6.4%)
	c. Myelofibrosis	2 (1.8%)
	d. Brain tumour	0
Periodontal disease is a risk factor for	a. Heart attack	4 (3.7%)
	b. Peptic ulcer	3 (2.8%)
	c. Infective endocarditis	101 (92.7%)
	d. Myocardial infarction	1 (0.9%)
Systemic complications due to untreated dental disease	a. Diabetes	2 (1.8%)
	b. Necrotizing fasciitis	92 (84.4%)
	c. Leukodema	0
	d. Gingivitis	15 (13.8%)
What changes in the oral cavity would you associate with progression towards oral cancer	a. White patch (leukoplakia)	22 (20.2%)
	b. Blanching and stiffness (oral submucous fibrosis)	8 (7.3%)
	c. Mixed red and white lesion	12 (11.0%)
	d. Exophytic growth	16 (14.7%)
	e. Non-healing ulcer/erosive lesion	51 (46.8%)
Is there any relationship exists between oral and general health?	a. Yes	107 (98.2%)
	b. No	2 (1.8%)
	c. Not aware	0
Which system most commonly affected resulting in oral manifestations?	a. Gastrointestinal	103 (94.5%)
	b. Respiratory	0
	c. Cardiovascular	6 (5.5%)
	d. Renal	0
Do HIV infection results in oral manifestations	a. Yes	92 (84.4%)
	b. No	17 (15.6%)

Distribution of oral manifestations in HIV individual	a. Fungal	71 (65.1%)
	b. Viral	17 (15.6%)
	c. Bacterial	2 (1.8%)
	d. Gingivitis/periodontitis	19 (17.4%)

Responses based on dental knowledge (Table 3)

Among the study subjects about 106 (97.2%) answered correctly that brushing teeth daily prevents tooth decay and periodontal diseases, 94 (86.2%) said that the most important factor resulting in dental caries is the use of sugar contained foods consumed per day, 93 (85.3%) have answered correctly that the factor responsible for gingival and periodontal diseases is the presence of plaque and calculus. A total of 103 (94.5%) answered correctly that Endodontics was a specialty in dentistry and none of the doctors answered correctly saying that scaling has no adverse effect on teeth. 85 (78%) said that scaling caused tooth sensitivity.

Responses based on attitudes towards dental health (Table 4)

Among the study subjects 87 (79.8%) have answered correctly saying that they would suggest their patients to brush their teeth twice daily. Ninety one (83.5%) accepted that they don't smoke or consume tobacco in smokeless form, 98 (89.9%) have answered correctly saying that they would suggest their patients to visit the dentist at least once in six months. One hundred two (93.6%) answered correctly saying that they would refer a patient with dental abscess to dentist rather than treating on their own. A total of 109(100%) accepted that dental treatments have a positive effect on quality of life and 10 that it is important for pregnant women to undergo routine dental checkup each. A total of 107 (98.2%) answered correctly that periodic dental care and checkups are important for pediatric patients and 94 (86.2%) answered correctly saying that medical doctors should examine the oral mucosa of the patients visiting them.

Responses on their awareness on systemic conditions related to oral health due to dental diseases/ infections (Table 5)

Among the study subjects about 95 (87.2%) correctly identified Ludwig's angina as a dental space infection and 100 (91.7%) correctly identified cavernous venous thrombosis as a life threatening situation due to untreated dental infection.

A total of 101 (92.7%) of the doctors correctly identified that periodontal diseases are risk factor for developing Infective Endocarditis and 92 (84.4%) answered that Necrotizing Fasciitis is a systemic complication due to untreated dental infection.

Fifty one (46.8%) of the doctors stated that the changes in the oral cavity which most commonly be associated with progression towards oral cancer is presence of a non-healing ulcer/ erosive lesions. The remaining 22 (20.2%) favored a white patch, 16 (14.7%) favored presence of an exophytic growth in oral cavity, 12 (11.0%) favored a mixed red and white lesion, and lastly 8 (7.3%) favored blanching and stiffness of the oral mucosa as having high potential for progressing towards oral cancer. One hundred seven (98.2%) of the doctors have answered that there exists a relationship between oral and general health.

A total of 103 (94.5%) answered that the system which when most affected results in oral manifestations is the gastrointestinal system, 92 (84.4%) answered correctly that HIV infection results in number of oral manifestations, 71 (65.1%) stated that fungal infections are the most common oral manifestations in HIV infected individuals. The remaining 19 (17.4%) favored gingivitis and periodontitis, 17 (15.6%) favored viral infections and lastly two (1.8%) stated bacterial infections as the most common oral manifestation in HIV infected individuals.

DISCUSSION

Oral health touches every aspect of our lives but is often taken for granted. Our mouth is a window into the health of our body. It can show signs of nutritional deficiencies or general infection. Systemic diseases, those that affect the entire body, may first become apparent because of mouth lesions or other oral problems. Hence, the compartmentalization involved in viewing the mouth separately from the rest of the body must cease as physician's play a pivotal role in oral public health.[5] They are endowed to have a basic dental knowledge as they do come across various oral problems among patients while practicing such as tooth ache, swelling in oral cavity, bleeding gums, various white and red patches. If they examine the oral cavity regularly, these conditions can be identified at the initial stages and hence early referral to the dentist for prompt treatment.

Results of the study showed that the medical practitioners

had moderate to good knowledge about dentistry.

In the present study with regards to dental knowledge 94 (86.2%) have said that the most important factor resulting in dental caries is the use of sugar contained foods consumed per day. This result is in coordination with the result of the study conducted by Srinidhiet al[6] in which 271 (90.3%) of medical practitioners favored sugar contained food as the major cause for the tooth decay.

In the present study with regards to attitude 98 (89.9%) have answered correctly saying that they would suggest their patients to visit the dentist at least once in six months. This result is slightly higher as compared to study conducted Srinidhi et al,[6] in which 229 (76.3%) of the medical practitioners suggested their patients to visit the dentist once in six months.

In the present study with regard to awareness about life threatening dental diseases, about 100 (91.7%) of the doctors havecorrectly identified cavernous venous thrombosis as a life threatening situation due to untreated dental infection. These results were slightly higher than those found in the study conducted by Srinidhiet al,[6] in which 257 (85.7%) of the doctors had answered correctly that cavernous thrombosis is a life threatening situation due to untreated dental infection. Similar results were found in the study conducted by Chandra et al[3] in which 255 (85%) of subjects were aware that some dental diseases are life threatening.

The increased awareness in this study may be due to the fact that the study was done among the educated/ professionals. However, results differ in studies done among medical students. Sujatha et al[7] showed that only 25% of the medical students has good oral health awareness. This is not unexpected since the students are in training.

Factors leading to this satisfactory dental knowledge, attitude and awareness of the medical practitioners towards oral disease and oral manifestations of systemic diseases, could be the continuing dental education programs being conducted by the various dental colleges, dental product manufacturers where even general medical practitioners are invited.[6,8-10] Also it is of prime importance to mention that MBBS curriculum in Nepal includes a dental posting in which they have an exposure to dental health aspects which improves their awareness, knowledge and attitude towards dentistry.

CONCLUSIONS

The results of the present study clearly demonstrate that medical practitioners had a moderate to good knowledge, attitude and awareness about dentistry. However, having knowledge does not guarantee that it will be effectively used. Some of the strategies which can help the medical practitioners to improve their knowledge, attitude and awareness towards oral aspects of various systemic and life threatening diseases are as follows: Incorporation of basic knowledge about dentistry in medical syllabus, Basic management of dental emergencies in medical practice, various inter-disciplinary symposia/lectures/ conferences/continuing medical/dental education programs with special emphasis on oral and general health, special study modules or electives in oral health and its correlation with various systemic diseases by involving the dental faculty in teaching should be created. It is also incumbent upon medical practitioners to keep their knowledge updated with time and get actively involved in oral health, as mouth is a mirror of systemic conditions.

Acknowledgement

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Partial Edentulousness in Patients Visiting the Dental Out-Patient Department of Gandaki Medical College, Pokhara, Nepal

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ABSTRACT

Introduction: Partial edentulousness is a dental arch in which one or more but not all natural teeth are missing due to dental caries, periodontal problems, trauma etc. It causes difficulty in chewing food, alteration of speech and unpleasant esthetics which adversely affect the general health and quality of life.

Methods: This study was conducted in the Department of Prosthodontics, College of Dental Surgery, Gandaki Medical College, Pokhara from November 2017 to March 2018. All patients above the age of 15 years presenting with partial loss of dentition and willing to give informed consent were included in the study. Data regarding age, gender, missing teeth, cause of permanent tooth loss and denture status were collected from 342 patients.

Results: The most common cause of permanent tooth loss was dental caries (58.2%) followed by periodontal (18.1%), dental caries and periodontal (9.4%), trauma (7.9%), dental caries and trauma (2.9%), periodontal and trauma (2.3%) and others (1.2%).The distribution of partially edentulous areas in maxillary arch (35.7%), mandibular arch (45.9%) and both arches (18.4%).The most common type of partial edentulism was found to be Kennedy's class III followed by class II, class I and class IV in both the arches.

Conclusion: The most common cause of permanent tooth loss was dental caries. Mandibular arch was more affected than the maxillary arch. The most common type of partial edentulism was Kennedy's class III.

INTRODUCTION

Partial edentulousness is a dental arch in which one or more but not all natural teeth are missing. Edentulism can occur due to dental caries, periodontal problems, poor oral hygiene, trauma, pulpal, periradicular disease, orthodontic and prosthodontic indications and some systemic factors.[1,2] It causes difficulty in chewing food, alteration of speech and unpleasant esthetics which adversely affect the general health and quality of life.[3,4]

For prevention and treatment of oral diseases, information is required about the cause of permanent tooth loss. The prevalence and patterns of tooth loss have been studied to a certain extent in other countries, but a few studies have been carried out in our country. A simple estimation of the proportion of partially edentulism is a rough indication of the prevalence of dental diseases and the success or failure of dental care. This forms a background for the assessment of treatment needs.

This study aims to identify the causes of permanent tooth loss and determine the pattern of partial edentulousness based on Kennedy's classification in patients visiting the dental OPD of Gandaki Medical College & Teaching Hospital, Pokhara, Nepal.

MATERIALS AND METHODS

This cross sectional study was carried out at Department of Prosthodontics, College of Dental Surgery, Gandaki Medical College & Teaching Hospital, Pokhara, Nepal. After the approval from institutional review committee, study was conducted among patients visited dental out-patient department from November 2017 to March 2018. Consecutive sampling technique was followed, and sample size was calculated as 342. The written informed consent was acquired before enrolling them to study.

The inclusion criteria were: aged between 15 years and 80 years, having partially edentulous region and those willing to give consent.

The exclusion criteria involved the patients who had completely edentulous or only missed maxillary and mandibular third molars. A brief history was taken and recorded in the case record sheet followed by oral examination using the Kennedy's classification by principal investigator.

Kennedy's classification:

Class-I: Bilateral edentulous area located posterior to the remaining natural teeth.
Class-II: Unilateral edentulous area located posterior to the remaining natural teeth.
Class-III: A unilateral edentulous area with natural teeth both anterior and posterior to it.
Class-IV: Single but bilateral edentulous area located anterior to the remaining natural teeth.

The findings were entered in work proforma and the data were entered into Microsoft 2007 Excel sheet. The descriptive statistical analysis was done using SPSS version 15 by age, gender, cause of permanent tooth loss, status of denture wearer, pattern of partial edentulism.

RESULTS

Out of 342 study population 147 (43%) were males and

195 (57%) were females with the age ranged between 15 - 80 years (Table 1). The most common cause of permanent tooth loss was dental caries (58.2%) followed by periodontal (18.1%), dental caries and periodontal (9.4%), trauma (7.9%), dental caries and trauma (2.9%), periodontal and trauma (2.3%) and others (1.2%). Mandibular was 18.4% of the study population had partial edentulism on both arches, while 35.7% had partial edentulism on the maxillary arch only and 45.9% on the mandibular arch only (Table 3). In the maxillary arch, Kennedy's class III (24.9%), was the most common pattern of partial edentulism followed by class II (10.5%), class I (10.2%), class IV (8.5%) Similarly in the mandibular arch, Kennedy's class III (34.5%) was the most common pattern of partial edentulism followed by class II (14.6%), class I (9.4%), and class IV (5.8%). (Table 4). Only 21.8% of the study population had replace their missing teeth (Table 5).

Table 1: Age and gender Distribution

Age range	Gender distribution	
	Males n(%)	Females n(%)
15 – 80 years	147(43%)	195(57%)

Table 2: Causes of permanent tooth loss

S.No	Causes of permanent tooth loss	Number (Percentage)
1	Dental caries	199 (58.2%)
2	Periodontal	62 (18.1%)
3	Trauma	27 (7.9%)
4	Dental caries and periodontal	32 (9.4%)
5	Dental caries and trauma	10 (2.9%)
6	Periodontal and trauma	8 (2.3%)
7	Others	4(1.2%)

Table 3: Arch wise distribution of partial edentulism

Arch	Number	Percentage
Maxillary only	122	35.7%
Mandibular only	157	45.9%
Both arches	63	18.4%
Total	342	100

Table 4: Distribution of Kennedy's classification in maxillary and mandibular arch

Kennedy's Class	Maxillary Arch n(%)	Mandibular Arch n(%)
Class I	35 (10.2%)	32 (9.4%)
Class II	36 (10.5%)	50 (14.6%)
Class III	85 (24.9%)	118 (34.5%)
Class IV	29 (8.5%)	20 (5.8%)

Table 5: Distribution of denture wearer and non denture wearer

Denture Wearer n(%)	Non Denture Wearer n(%)
75 (21.8%)	267 (78.2%)

DISCUSSION

In our study, we found that partial edentulism was more common in females than in males, which is consistent with the study carried out by Naveed H et al[4], Sapkota B et al[5], and Patel JY et al.[6] However, some earlier studies showed more males being edentulous than females.[7,8] This contradiction may be in part due to more females visiting the dental hospital and could also be attributed to the different socio-economic background and mal-habits like smoking and consumption of high sugar-containing diets among males. The most common cause of permanent tooth loss was found to be dental caries (58.2%) followed by periodontal disease (18.1%) which is in agreement with the findings of studies carried out by Muneeb A et al,[9] Akinboboye B et al.[10] The poor oral hygiene and inaccessibility for proper cleaning could be the possible reason which ultimately leads to dental caries and periodontal problems for tooth extraction.

In our study, Mandibular arch was affected more than the maxillary arch which is consistent with findings of other studies.[4,6] The most common type of edentulism was Kennedy's class III both in maxilla and mandible which is in agreement with the various studies conducted by Naveed et al,[4] Sapkota et al,[5] Patel et al,[6] Muneeb et al,[9] Bharathi M et al.[11] This could be due to the fact that the first molar is the first permanent tooth to erupt into the oral cavity, having a higher caries percentage and a higher chance of the tooth being extracted. The second most common type of edentulism was Kennedy's class I and least prevalent is class IV both in maxilla and mandible which is in agreement with various studies conducted by Patel et al,[6] Bharathi et al[11] and Charyeva et al.[12] However Kennedy's class I was the least common in the study conducted by Munneeb et al.[9]

In our study, 21.8% of the study population had already replaced their missing teeth. Of the various classes of partial edentulism patients with class IV situation got their teeth replaced which could be attributed to esthetic reasons. This was followed by class I and II; the main reason could be for masticatory purposes. However, persons with class III had the less percentage of replacement, which could be because they had an option of getting their teeth replaced with a fixed partial denture or an implant which might have been beyond their affordability.

CONCLUSION

The most common cause of permanent tooth loss was dental caries. Mandibular arch was more affected than the maxillary arch. The most common type of partial edentulism was Kennedy's class III and least common was Kennedy's class IV in both the arches.

Acknowledgement

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Methicillin Resistant *Staphylococcus aureus* Contamination of Hands and Mobile Phones of Health Care Workers in a Health Care Setting: A Silent Threat

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ABSTRACT

Background: The extensive use of mobile phones in the hospital among health care workers (HCWs) can lead to infectious agents being transferred from one patient to another and thus serve as a vehicle in the transmission of nosocomial pathogens.

Objectives: This study aimed to investigate the prevalence of Methicillin Resistant *Staphylococcus auerus* (MRSA) contamination of mobile phones and hands of HCWs in Gandaki Medical College and Teaching Hospital.

Methods: The present study was hospital and laboratory based cross-sectional study, carried out from April, 2017 to December, 2017. A total of 100 mobile phone swab and 100 hand swab samples of HCWs were collected and cultured directly on MacConkey agar, blood agar, and mannitol salt agar after 24 hrs of enrichment. All the isolated organisms including MRSA were identified using standard microbiological techniques and subjected to antibiotic susceptibility testing using disc diffusion technique.

Results: Among the Gram positive isolates, frequency distribution from mobile phones showed the highest prevalence of coagulase negative Staphylococci (CONS) (34.69%), followed by *Staphylococcus aureus* (20.41%), *Bacillus spp* (15.31%), *Micrococci spp* (11.23%), however considerable number of Diptheroides (8.16%), *Enterococci* (6.12%) and *Streptococcus pneumoniae* (4.08%). Siimilarly from hand swabs CONS (39.62%), followed by *S. aureus* (26.42%), *Bacillus spp* (10.38%), *Micrococci* (11.32%), *Enterococci* (6.60%) and Diptheroids (5.66%) were isolated. The frequency of MRSA was 20%, 25% among mobile phones and hands of HCWs respectively. Drugs like Vancomycin, Amikacin, Clindamycin and Gentamycin were found quite effective against *S. aureus* in the present study and would be better options for the management of such infections.

Conclusions: Mobile phones and hands of HCWs were the potential source of nosocomial infections including multidrug-resistant pathogens like methicillin-resistant *S. aureus.*

INTRODUCTION

Mobile phones are used in various places like hospital halls, laboratories, outpatient department, operation theatres, and various areas in the hospital that may act as fomites and may facilitate transfer of microbes from one patient to another in hospital settings.[1] The constant handling of mobile phones by single or multiple users in health care facilities makes it an open breeding place for transmission of microorganisms; especially those associated with the skin due to the moisture and optimum temperature of human body especially the palms. Warmth, ideal temperature conditions and heat generated by mobile phones contribute to harboring bacterial populations on such devices at alarming rates.[2,3]

Despite all the advantages gained from the mobile phones, the health hazard it might pose to its users should not be over looked. Mobile phones are daily in contact with the face, ears, mouth and hands during usage and serve as a ready surface for colonization of pathogenic as well as non pathogenic microorganisms and could act as a fomite for microorganisms that eventually transmit more than just a call.[4,5] Mobile phones are hardly ever cleaned and are often touched during or after examination of patients and handling of specimens without proper hand washing.[1] In recent years, some studies have been conducted on the potential role played by hands and the mobile phones belonging to health workers and inpatients in the transmission of important nosocomial pathogens.[6,7] Moreover, the mobile phones are used routinely all day long and the same phones are used both inside and outside the hospital playing a possible role in spreading infections to the outside Community.[8]

Drug resistant pathogens such as methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin resistant *Enterococci* (VRE) have been recovered from mobile phones; raising important safety concerns about the use of such devices in health care facilities.[9] Indeed, the delay in detection and reporting such pathogens may lead to prolonged hospitalization of patients, increased morbidity and mortality as well as increased cost of health care[10] and hence can be considered an economic burden to society more in context of developing country like Nepal.

Nosocomial infections are increasing as these may be spread through the hands of health-care personnel, use of stethoscopes, and other daily instruments used by health-care personnel. Considering the potential threats of mobile phones and poor hand hygiene that may exaggerate the rate of nosocomial infections, it is of utmost important of strict hygiene standards to prevent hospital acquired infection in a hospital setting.[11,12] In addition, there are no guidelines on the use and cleanliness of these mobile phones which makes them an important source of hospital acquired infections among the patients in the hospital.

This study aimed to investigate the prevalence of MRSA contamination of mobile phones and hands among HCWs in Gandaki Medical College and Teaching Hospital and their antibiotic susceptibility pattern.

The data obtained in this study could further be used to build awareness about the health risks associated with extensive use of mobile phones in health care setting and poor hand hygiene not only to the patients, HCWs in the hospital but also to their family members. Hospital infection control committee can formulate a sound and feasible policy with respect to mobile phone usage and practice of hand washing within hospital premises.

MATERIALS AND METHODS

Study area and duration

The samples were collected from the mobile phones and hands of Health care workers working at various departments of Gandaki Medical College and Teaching Hospital, Prithivi Chowk, Pokhara, Nepal and these samples were processed in the Microbiology Laboratory of same institution from the beginning of April 2017 till the end of December 2017 after obtaining ethical clearance from Gandaki Medical College and Teaching Hospital's Institutional Review Committee.

Number and type of study sample

This is a descriptive cross-sectional study. A total of 100 mobile phone swab samples and 100 hand swab samples from doctors, nurses, laboratory technicians and helpers from various wards and departments were included in this study. Verbal consent was taken from each participant prior to specimen collection.

Data collection

Socio-demographic characteristics of the participants: A self-administrated questionnaire was employed to collect information about the socio-demographic characteristics

(Age, gender, and profession), use of mobile phones in toilets, habit of disinfecting of mobile phones, use of mobile phones by others at workplace and home, knowledge on presence of pathogenic bacteria on mobile phones and hands, habit of hand washing and their view on applying restrictions on use of mobile phones in hospital.

Collection and processing of samples

The health care worker's mobile phone swab and hand swab samples were collected by means of sterile cotton swabs moistened in sterile saline water (0.85%). The swabs were wiped firmly on the entire surface of the mobile phones and hands. The sterilized cotton buds were rotated onto the overall surface area of the mobile phone by keeping the mobile phone in two fingers. Similarly, sterilized cotton buds were rotated onto the overall surface area of palms of both hands and in between of the fingers. The cotton bud swab after swabbing the mobile phone and hands were kept in the sterile small tube containing Brain Heart Infusion (BHI) broth separately and was immediately transported to the Microbiology Laboratory of Gandaki Medical College and Teaching Hospital (GMCTH) for further processing. Specimens contained in clean, leak proof container without visible sign of contamination and proper labeling were included in this study.

All the swabs were cultured directly on blood agar, MacConkey agar and mannitol salt agar (HiMedia). All cultured plates were incubated aerobically at 37°C for 24 hours. The primary isolates were subcultured on nutrient agar (HiMedia). Isolates were identified on the basis of colonial appearance, Gram stain, and conventional biochemical tests.[12] Antibiotic disc susceptibility testing was done to compare isolates recovered from both mobile phones and HCWs' hands by using Clinical Laboratory Standards Institute guidelines (CLSI, Atlanta, USA).[13] All *Staphylococcus aureus* isolates were tested for meticillin resistance using a disc of oxacillin (10 μg) and using disc of Cefoxitin (30 μg) according to CLSI (2017).[14]

Data Collection and Analysis

All the data were entered into a computer database using standard format, checked for errors and verified. Data maintained in the computer sheets were organized and analyzed by using GraphPad Prism software for Windows (version 8). Data were presented in appropriate tables, figures by calculating percentage, rate etc. Appropriate statistics were applied wherever applicable and p≤0.05

level was used as the cut off value for statistical significance.

RESULTS

Among total 100 HCWs included in this study; 33% (33/100) were males while 67% (67/100) were females. Professionally majority of them were doctors (45/100, 45%), nurses (37/100, 37%), laboratory technicians 6% (6/100) and helpers 9% (9/100). Among the 45 doctors, 62.22% (28/45) were males and 37.78% (17/45) were females. Among six laboratory technicians, 66.67% (4/6) were males and 33.33% (2/6) were females. All nurses and helpers included in the study were female. The response given by the participants regarding the use of mobile phones are summarized in Table 1. Accordingly 100%, 100%, 76% and 82% of the participants use mobile phones in the health centre, use same mobile phones at home, use mobile phones in toilet and while attending patients respectively, while 83% had never disinfected their phones. Sixty six percent respondents didn't wash their hands before attending their patients and 22% don't think that their phones may carry bacteria. Mobile phones of 82% and 43% of the HCWs participated in this study were used by their family members at home and by co-workers at workplace respectively. The 21 (21%) of the health care workers agree on restrictions about use of mobile phones in hospital.

Table 1: Responses of participants for questions related to the use of mobile phones

Questions	YesN (%)	No N (%)
Do you use your mobile phone in the health centre?	100(100%)	0(0%)
Do you use the same mobile phone at home?	100 (100%)	0 (0%)
Do you use your mobile phone in toilet?	76 (76%)	24 (24%)
Do you answer phone calls while attending patients/ or during work?	82 (82%)	18 (18%)
Have you ever disinfected your mobile phone?	17 (17%)	83 (83%)
Do you wash your hands before attending your patients?	34 (52%)	66(66%)
Do you think mobile phones can carry bacteria?	78 (78)	22 (22%)
Do your families use your mobile phone at home?	82 (82%)	18 (82%)
Do your coworkers use your mobile phone at hospital?	43 (43%)	57 (57%)
Do you agree on restrictions about use of mobile phones in hospital?	21 (21%)	79 (79%)

Distribution pattern of Gram-positive bacteria isolated from various mobile and hand swabs collected from HCWs

The frequency of positive culture among mobile phone and hand swab samples were 97% (97/100), 94% (94/100), respectively and most of them showed polymicrobial growth both on their mobile phones and hand swabs.

Among the 165 isolates from mobile phones, the total numbers of Gram positive bacteria isolated was 59.39% (98/165). Among these Gram positive isolates, the most prevalent bacteria identified was Coagulase Negative Staphylococci (CONS, 34.69%), followed by *S. aureus* (20.41%), *Bacillus spp* (15.31%), *Micrococci* (11.23%), Diptheroides (8.16%), *Enterococci* (6.12%), and *Streptococcus pneumoniae* (4.08%). Similarly among the total 106 Gram positive isolates isolated in hand swabs the most prevalent bacteria identified were CONS (39.62%) followed by *S. aureus* (26.42%), *Micrococci* (10.38%), *Bacillus spp* (11.32%), Diptheroids (5.66%) and *Enterococci* (6.0%). No isolates of *Streptococcus pneumoniae* was isolated from any of hand swab sample (Table 2). The bacillus isolated in this investigation was identified according to their morphology and Gram stain. They were Gram positive bacilli and sporulated.

Table 2: Frequency and distribution pattern of of Gram positive bacteria isolated from various mobile phone and hand swabs collected from HCWs

Gram positive bacterial agents identified		Study Group					
		Doctors	Nurses	Lab Techs.	Helpers	Total	Percentage (%)
CONS	Mobile	16	11	4	3	34	34.69 (34/98)
	Hand	18	12	5	7	42	39.62 (42/106)
Staphylococcus aureus	Mobile	8	6	3	3	20	20.41 (20/98)
	Hand	11	7	5	5	28	26.42 (28/106)
Bacillus spp	Mobile	4	6	2	3	15	15.31 (15/98)
	Hand	3	4	1	3	11	10.38 (11/106)
Micrococci	Mobile	4	4	1	2	11	11.23 (11/98)
	Hand	3	4	2	3	12	11.32 (12/106)
Diptheroids	Mobile	3	3	-	2	8	8.16 (8/98)
	Hand	2	3	-	1	6	5.66 (6/106)
Enterococci	Mobile	1	3	2	-	6	6.12 (6/98)
	Hand	2	3	1	1	7	6.60 (7/106)
Streptococcus pneumoniae	Mobile	-	2	2	-	4	4.08 (4/98)
	Hand	-	-	-	-	-	-

Antibiotic Susceptibility Test of the isolated Gram-positive bacteria from mobile phones

Various antibiotics were used for antibiotic susceptibility pattern determination using Kirby Bauer disc diffusion method. Coagulase Negative Staphylococci showed 100% sensitive to Vancomycin, followed by Amikacin (94.12%), Clindamycin (88.24%), Gentamycin (85.29%), Oxacillin (76.47%), Cefoxitin (76.47), Ciprofloxacin (67.65%), Amoxicillin+ Clavulanate (52.94%), Cotrimoxazole (50%), Chloramphenicol (47.05%), Erythromycin (41.17%) and Ampicillin (11.76%). Isolated all CONS showed 100% resistant to Penicillin (table 3). *Staphylococcus aureus* was found to be 100% resistant to Penicillin. No Vancomycin resistant *S. aureus* was reported. The effective antibiotics were Amikacin (95%), Clindamycin (90%), Gentamicin (85%), Cefoxitin (80%), Oxacillin (80%), Chloramphenicol (65), Ciprofloxacin (65%), Amoxicillin+ Clavulanate (60%), Cotrimoxazole (45%) and Erythromycin (25%) (Table 3).

No vancomycin resistant Enterococci were observed in this study. The isolated Enterococci were sensitive to Amikacin (83.33%), Gentamicin (83.33%), Amoxicillin+ Clavulanate (66.66%), Clindamycin (66.66%), Chloramphenicol (50%), Ciprofloxacin (50%), Cotrimoxazole (33.33%), Penicillin (33.33%) and Erythromycin (33.33%) (table 3). All isolated Enterococci are 100% resistant to Ampicillin. However, *Streptococcus pneumoniae* 100% sensitive to Vancomycin followed by 75% sensitive to Amikacin, Gentamycin, Clindamycin, Cotrimoxazole, Ciprofloxacin, 50% sensitive to Chloramphenicol, Amoxicillin + Clavulanate, Penicillin and 25% sensitive to Erythromycin. (Table 3). 100% *Streptococcus pneumoniae* are resistant to Ampicillin.

Table 3: Antibiotic susceptibility pattern of the isolated Gram-positive bacteria from mobile phones

Organisms	Coagulase Negative Staphylococci	*Staphylococcus aureus*	*Enterococcus spp*	*Streptococcus pneumoniae*
Total no. of isolates	34	20	6	4
No. (%) of isolates sensitive to				
OX	26 (76.47)	16 (80)	-	-
CX	26 (76.47)	16 (80)	-	-
GEN	29 (85.29)	17 (85)	5 (83.33)	3 (75)
P	0 (0)	0 (0)	2 (33.33)	2 (50)
AMC	18 (52.94)	12 (60)	4 (66.66)	2 (50)
CPL	23 (67.65)	13 (65)	3 (50)	3 (75)
COT	17 (50)	9 (45)	2(50)	3 (75)
Cl	30 (88.24)	18 (90)	4(66.66)	3 (75)
C	16 (47.05)	13 (65)	3(50)	2 (50)
ERY	14 (41.17)	5 (25)	2(33.33)	1 (25)
V	34 (100)	20 (100)	6 (100)	4 (100)
AK	32 (94.12)	19 (95)	5 (83.33)	3 (75)
AMP	4 (11.76)	0 (0)	0 (0)	0 (0)

OX, Oxacillin; CX, Cefoxitin; GEN, Gentamycin; P, Penicillin; AMC, Amoxicillin+Clavulanate; CPL, Ciprofloxacin; COT, Cotrimoxzole; Cl, Clindamycin; C, Chloramphenicol; ERY, Erythromycin; V, Vancomycin; AK, Amikacin, AMP, Ampicillin

Antibiotic susceptibility test of the isolated Gram positive bacteria from hand swabs

Coagulase negative staphylococci showed 100% sensitive to Vancomycin, followed by amikacin (90.47%), oxacillin (76.19%), Cefoxitin (76.19), Ciprofloxacin (69.08%), Clindamycin (66.66%), Gentamycin (66.66%), Chloramphenicol (47.61%), Cotrimoxazole (45.23%), Amoxicillin+ Clavulanate (45.23%), Erythromycin (42.85%) and ampicillin (26.19%). All isolated CONS showed 100% resistant to Penicillin (Table 4).

Staphylococcus aureus was found to be 100% resistant to penicillin. No vancomycin resistant *S. aureus* was reported. The effective antibiotics were Amikacin (92.85%), Gentamicin (78.57%), Clindamycin (75.0%), Cefoxitin (75%), Cxacillin (75%), Ciprofloxacin (53.57%), Chloramphenicol (46.42%), Cotrimoxazole (39.28%), Amoxicillin+ Clavulanate (32.14%), and Erythromycin (14.28%) (Table 4).

No vancomycin resistant Enterococci were observed in this study. The isolated Enterococci were sensitive to Amikacin (100.0%), Gentamicin (84.85%), Clindamycin (71.42%), Amoxicillin+ Clavulanate (57.14%), Chloramphenicol (57.14%), Erythromycin (57.14%), Cotrimoxazole (42.85%), Ciprofloxacin (42.85%), Ampicillin (42.85%) and Penicillin (42.85%%) (Table 4).

Table 4: Antibiotic susceptibility pattern of the isolated Gram positive bacteria from hand swabs

Organisms	Coagulase Negative Staphylococci	*Staphylococcus aureus*	*Enterococcus spp*
Total no. of isolates	42	28	7
No. (%) of isolates sensitive to			
OX	32 (76.19)	21 (75)	-
CX	32 (76.19)	21 (75)	-
GEN	28 (66.66)	22 (78.57)	6 (84.85)
P	0 (0)	0 (0)	3 (42.85)
AMC	19 (45.23)	9 (32.14)	4 (57.14)
CPL	29 (69.08)	15 (53.57)	3 (42.85)
COT	19 (45.23)	1 (39.28)1	3 (42.85)
Cl	28 (66.66)	21 (75)	5 (71.42)
C	20 (47.61)	13 (46.42)	4 (57.14)
ERY	18 (42.85)	4 (14.28)	4 (57.14)
V	42 (100)	28 (100)	7 (100)
AK	38 (90.47)	26 (92.85)	7 (100)
AMP	11 (26.19)	0 (0)	3 (42.85)

OX, Oxacillin; CX, Cefoxitin; GEN, Gentamycin; P, Penicillin; AMC, Amoxicillin+Clavulanate; CPL, Ciprofloxacin; COT, Cotrimoxzole; Cl, Clindamycin; C, Chloramphenicol; ERY, Erythromycin; V, Vancomycin; AK, Amikacin, AMP, Ampicillin

Prevalence of methcillin resistant *Staphylococcus aureus* (MRSA) among the isolated *Staphylococcus aureus* from mobile and hand swabs

Out of total 100 mobile phone swab samples processed and 20 *Staphylococcus aureus* isolated, 20% (4/20) were methicillin resistant *Staphylococcus aureus* (MRSA) and 80% (16/20) were methicillin sensitive *Staphylococcus aureus* (MSSA) (Fig 1). Similarly, out of total 100 hand swab samples processed and 28 *Staphylococcus aureus* isolated, 25% (7/28) were MRSA and 75% (21/28) were MSSA (Fig 1). Overall prevalence of MRSA isolated from mobile phones and hand swab samples didn't show any significant difference (p=0.4985) (Table 5).

Table 5 : Prevalence of MRSA among the isolated *Staphylococcus aureus* from mobile and hand swabs

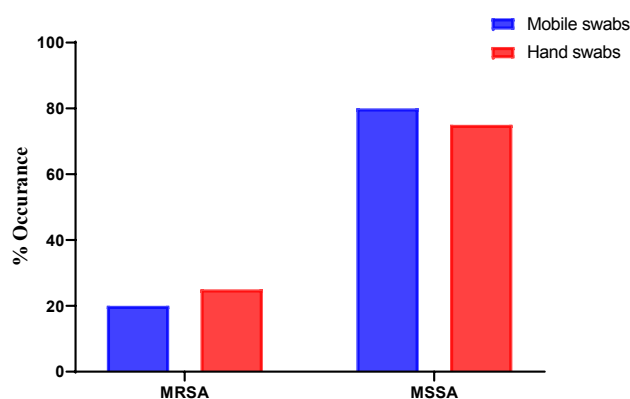| Data analyzed	Mobile swabs (%)	Hand swabs (%)	Total (%)	P value
MRSA	20	25	45	
MSSA	80	75	155	P=0.4985
Total	100	100	200	

Fig 1: Percentage occurrence of MRSA recovered among the isolated *Staphylococcus aureus* from mobile phone and hand swabs

DISCUSSION

MRSA is one of the most important cause of hospital acquired infections with a significant morbidity and

mortality.[15,16] In a healthcare setup a patient may acquire MRSA through the hands, clothes, mobile phones and equipment of health care workers. Screening of health care workers mobile phones and hands colonised with MRSA will be helpful in preventing the spread of this organism in a hospital. With this background the present study was undertaken to investigate the prevalence of MRSA contamination of mobile phones and hands of HCWs in Gandaki Medical College and Teaching Hospital and their antibiotic susceptibility pattern.

The frequency of positive culture among mobile phone and hand swabs were 97% (97/100), 94% (94/100), respectively and most of them showed polymicrobial growth both on their mobile

phones and hand swabs which were in accordance with the study done by Arora et al,[1] Ugler et al,[17] Tambe et al[18] who had showed 91.6%, 94.5%, 90.98% of phones of bacterial contamination with different type of bacteria.

This study revealed high level of bacterial contaminants on mobile phones and hands of HCWs which were contaminated with considerable number of Gram positive bacteria. The present study showed that CONS (34.69%) and *S. aureus* (20.41%) were the prevalent organisms for mobile phones and similarly that of CONS 39.62% and *S. aureus* 26.42% for hand swabs of HCWs. This result is in consistent with that reported by Anupriya et al,[19] Bhumbla et al[20] and Ulger et al.[17]

A high percentage of *Bacillus spp* was isolated from this research and its predominance could be explained by the fact that *Bacillus spp* are ubiquitous in nature with their spores able to resist environmental changes, withstand dry heat and certain chemical disinfectants for moderate periods.

CONS, *S. aureus* and *Bacillus spp* recovered during this study constitute a major part of normal skin flora; which probably explains its high prevalence as a contaminant, as it can easily be discharged by several human activities and they may be passed from person to person by direct contact or via surfaces, including door handles. These organisms are potentially pathogenic and may cause disease due to their high resistance such as food poisoning, boils, abscesses, pimples, wound infections if enter the body can lead to bacteremia and sepsis, pneumonia, meningitis, and osteomyelitis. This observation is in agreement with the findings of other researchers (Brooks

et al).[21]

There is an alarming increase of antibiotic resistance in bacteria that cause either community infections or hospital acquired infections. In this study, the resistance of *S. aureus* was found to be 100% resistant to Penicillin which is in accordance to Radhakrishnan et al.[22] Though Araliet al[23] observed 4.9% resistance was for Vancomycin among the isolated *S. aureus* from the anterior nares of school going children, no vancomycin resistant *S. aureus* was reported in this study among mobile phones and hand swabs of HCWs which is similar to the findings of Radhakrishnan et al.[22] The effective antibiotics were Amikacin (95%), Clindamycin (90%), Gentamicin (85%), Cefoxitin (80%), Oxacillin (80%), Chloramphenicol (65), Ciprofloxacin (65%), Amoxicillin+ Clavulanate (60%), Cotrimoxazole (45%) and Erythromycin (25%) for *S. aureus* isolated from mobile phones. Likewise, the effective antibiotics for *S. aureus* isolated from mobile phones were Amikacin (92.85%), Gentamicin (78.57%), Clindamycin (75.0%), Cefoxitin (75.0%), Oxacillin (75%), Amoxicillin+ Clavulanate (60.71%), Ciprofloxacin (53.57%), Chloramphenicol (46.42), Cotrimoxazole (39.28%) and Erythromycin (14.28%). Overall resistance of *S. aureus* to antibiotics likes Ciprofloxacin, Co-trimoxazole and Amoxicillin-Clavulanic acid was found high. These antibiotics being cheaper and easy to administer were extensively used in past few years might be the reasons for their high resstance pattern. Use of expensive and injectable antibiotics like Amikacin was less in small clinics and reflects on higher percentage of sensitive isolates.

The prevalence of MRSA among the isolated *S. aureus* in this study among the samples from mobile phones was 20% (4/20) and 25% (7/28) from hand swabs which was comparable with earlier reports of MRSA from Nepal which reported prevalence of 15.4% to 29% by Kumari et al[24] and Subedi and Brahmadathan.[25]

Although, the presence of MRSA among health care workers mobile phones and hand swabs in this hospital is not alarming, it is important to emphasize the need for stringent hospital infection control policies. Since HCWs may act as silent carriers of MRSA and play a vital role in spreading nosocomial infection including MRSA in community and family members, it is also important to stress the importance of hand hygiene among health care workers to prevent transmission of MRSA within the hospital and also to their family members. However, further research is necessary to determine

the quantitative association between increased hand hygiene compliance and reduction in MRSA. Moreover, hospital infection control committee shall be established to monitor the practice of hand washing techniques and assessing the outcomes at frequent intervals to reduce the MRSA prevalence amongst HCWs.

CONCLUSION

Mobile phones and hands of HCWs were the potential source of nosocomial infections including multidrug-resistant pathogens like methicillin-resistant *S. aureus*. Appropriate hand hygiene is the most important measure that should be practiced during patient care to reduce the spread of MRSA and nosocomial infections. Thus strict hand hygiene, decontamination of mobile phones and restriction of the use of mobile phones in high risk areas should be advocated to prevent the spread of infection in the hospital settings.

Acknowledgments

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A study to Assess the Knowledge Regarding Human Right of Mentally Ill Patient among Community People in Kaski, Pokhara,Nepal

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ABSTRACT

Introduction: Mental health problems raise many human rights issues. People with mental illness are exposed to human rights violation within and outside the health care context. Because of lack of awareness, people with mental illness and their families do not exercise their rights. Psychiatric patients are most vulnerable groups in community. Incidence of violation of rights of mentally ill patients can be avoided if the community people become aware of them.

Objective: To assess knowledge regarding human rights and myth of mental illness among community people.

Method: A descriptive crosssectional study was conducted among 140 community people of Ritthepani-27, Kaski, Nepal. Non probability convenient sampling technique was adopted to collect the data. Inclusion criteria included head of the family of the selected community who were willing to participate in the study. Data was collected through face to face interview using a structured questionnaire.

Results: In the present study, it was found that 46.40% of the community people had inadequate knowledge regarding human rights of mentally ill patients. There was no significant association between demographic variables and knowledge score of the respondents. The study found that more than half of the respondents (51%) had belief that mental illness is not related to physical health. Likewise 36.4% believed mental illness is caused by supernatural power and evil and 30% believed that marriage can cure mental illness.

Conclusion: Based on findings, it is concluded that the level of knowledge regarding rights of mentally ill patient is inadequate and there is a high prevalence of myths and misconceptions related to mental illness among the adult population. So, there is need to conduct awareness raising activities in the community.

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INTRODUCTION

Mental, physical and social health are vital strands of life that are closely interwoven and deeply interdependent. Mental health is crucial to the overall wellbeing of individuals, societies and countries.[1] A healthy person has a fit physique, satisfying social status, balanced emotional health along with sound mental health. These all dimensions are closely related and directly affect each other. A person who is able to understand the facts, rationalize the doubts, interpret the views and solves the problem tactfully is considered mentally healthy but

a person who has clinically significant disturbance in cognition, emotion regulation or behavior that reflects a dysfunction in the psychological, biological and developmental processes underlying mental functioning is considered as a mentally ill. Hence, mental illness refers to a wide range of mental health conditions disorders that affect the mood, thinking and behaviour.[2]

WHO says one in four people in the world will be affected by mental or neurological disorders at some point in their lives and around 450 million people currently suffer from such conditions, placing mental disorders among the leading causes of ill-health and disability worldwide. Despite of the availability of treatments nearly two-thirds of people with a known mental disorder never seek help from a health professional due to stigma, discrimination and negligence.[1] Many people have mental health concerns from time to time. But a mental health concern becomes a mental illness when ongoing signs and symptoms cause frequent stress and affect the ability to function effectively and efficiently.[3]

Community is a place surrounded with people of different thoughts, beliefs and concepts. Therefore, people in a community have different widespread stigmatizations of mental illnesses. Decades of research have established that the public holds negative beliefs about persons with mental illnesses among them that such individuals are dangerous, unpredictable, unattractive, and unworthy and are unlikely to be productive members of their communities. Moreover, these negative perceptions and stigmas have been remarkably constant despite advances in scientific understanding of mental illnesses and extensive efforts to improve public understanding.[4]

Hence, mental illness is difficult to understand and can lead to prejudice and discrimination. So, it is the utmost need of today that people should know, understand and accept mental illness as it is the most effective way of battling stigma towards those diagnosed with mental illness. This understanding provides an environment where a mentally healthy person can provide compassion and empathization towards the affected by strengthening the relationship in increasing the understanding among one another.[5] Thus, this study intended to get the baseline data on knowledge about rights of mentally ill patients and myths on mental illness.

Objectives of the study

- To assess the level of knowledge of community people regarding human rights of mentally ill

patient.

- To determine the knowledge of community people on myths regarding mental illness.

- To find association of level of knowledge regarding human rights of mentally ill patient with selected variables.

METHODS

A descriptive cross-sectional research design was used to conduct the study among 140 community people residing in Ward no 27 of Pokhara Municipality of Kaski district, Nepal. Five toles of ward 27 namely Shiva tole, Milan tole, Sundari tole, Sworga tole and Durga tole were purposively selected and then 28 people meeting the criteria were selected from each toles on first come first basis by visiting house to house using convenient sampling technique. Sample included the head of the family of the selected community who were available during the period of data collection. Only one member of each household (older one) was included in the study.

A semi-structured interview schedule was developed through review of related literature and consultation to the experts which was organized into three parts: Part I consisted of semi-structured questions related to socio-demographic characteristics which included age, gender, education, occupation, ethnicity and religion. Part II consisted of structured questions related to 14 human rights of mentally ill patient and Part III consisted of 13 myths related to mental illness.[3,6]

The scoring of part II of the questionnaire were determined by giving one point (1) for each correct response and zero (0) for wrong answers or no response. The total knowledge score were calculated by adding up the scores for each question in the test. The total knowledge scores ranged from zero to 14, with higher scores indicating a higher level of knowledge. According to the median split method,[7] respondents with a total score of less than median were considered as having inadequate knowledge regarding human rights of mentally ill and those with scores median and above were considered as having adequate knowledge. This scoring method and categorization was used to identify the level of respondents' knowledge in the current study.

Overall, validity of the instrument was ascertained by

reviewing the related literatures and consultation with peers, research advisors and subject matter experts before and during the construction of the tool. To identify accuracy, clarity and consistency of the tool, pretesting of the instrument was conducted on 14 people meeting the criteria in Lamtara tole of the ward no 27 of Lekhnath municipality.

Data was collected by researchers themselves with the help of B.Sc. nursing students from June 29, 2017 to July 22, 2017 (2074/3/15 to 2074/4/7 B.S) after obtaining verbal permission from the chairperson of the ward. Data was collected at the place convenient for respondents in their residence by face to face interview schedule. Respondents were approached in the daytime as they were busy with work during morning and evening time. Informed verbal and written consent was obtained from the respondents prior to data collection after giving information about the nature of the study and their role in research. To maintain the quality of the data, clear instruction was given about answering the questionnaire. The average time taken for the questionnaire was about 20-30 minutes. About 7-8 respondents were interviewed in a day. After the data collection, every queries of respondents were addressed and informal health teaching regarding rights and myths of mentally ill patient was provided.

The data were coded and entered in IBM Statistical Package for Social Sciences (IBMSPSS, version 20). Data was analyzed and interpreted by using descriptive statistics (frequency, percentage, mean, median and standard deviation) to describe the socio demographic as well as the knowledge and myths related variables and inferential statistics (Chi-square test) was used to measure association of level of knowledge about rights of mentally ill patient with selected variables. The level of significance was set at less than 0.05 for all analyses.

RESULTS

Table 1: Frequency and percentage distribution of demographic characteristics (n=140)

Characteristics	Frequency	Percentage (%)
Age in years		
• ≤ 40	102	72.9%
• > 40	38	27.1%

Gender		
• Male	35	25%
• Female	105	75%
Ethnicity		
• Upper caste group	22	15.7%
• Dalit	62	44.3%
• Janajatis	56	40.0%
Religion		
• Hindu	104	74.3%
• Buddhist	29	20.7%
• Christian	7	5.0%
Educational status		
• Illiterate	56	40%
• Below SLC	78	55.7%
• PCL	3	2.1%
• Bachelor and above	3	2.1%
Occupation		
• Labour	51	36.4%
• Farmer	45	32.1%
• Housewife	19	13.6%
• Business	17	12.1%
• Service	8	5.7%

Table 1 shows that out of 140 respondents, 102 (72.9%) were below 40 years of age, three fourth (75%) were females, 62 (44.3%) belonged to Dalit group, 104 (88.7%) were Hindus by religion, 84 (60%) were literate and 51 (36.4%) were labor workers.

Table 2: Knowledge of community people on rights of mentally ill patient (n=140)

Rights	Frequency	Percentage
Right to treatment in least restrictive method		
Yes	37	26.4%
No	103	73.6%
Right to confidentiality of records		
Yes	97	69.3%
No	43	30.7%
Right to freedom from restraints and seclusion		
Yes	106	75.7%
No	34	24.3%
Right to give or refuse consent to treatment		
Yes	106	75.7%

No	34	24.3%
Right to access to personal belongings		
Yes	123	87.9%
No	17	12.1%
Right to daily exercise		
Yes	121	86.4%
No	19	13.6%
Right to have visitors		
Yes	120	85.7%
No	20	14.3%
Right to use of writing materials and uncensored mails		
Yes	90	64.3%
No	50	35.7%
Right to use of telephone		
Yes	85	60.7%
No	55	39.3%
Right to access courts and attorney		
Yes	70	50%
No	70	50%
Right to employment compensation		
Yes	92	65.7%
No	48	34.3%
Right to be informed of rights		
Yes	130	92.9%
No	10	7.1%
Right to wear their own clothes		
Yes	131	93.6%
No	9	6.4%
Right to spend a sum of their money for their own expenses		
Yes	102	72.9%
No	38	27.1%

Table 2 presents the knowledge of community people on rights of mentally ill patient which shows that patient's right to get treatment in least restrictive method was not known by about three fourth (73.6%) of the respondents. Half of the respondents were not aware that mentally ill have right to access courts and attorney.

Table 3: Statistics of overall scoring on level of knowledge (n=140)

Variable	Total Possible Score	Mean (S.D.)	Median	Mini-mum	Maxi-mum
Overall knowledge score on rights of mentally ill	14	10.54 (2.17)	11.00	2	14
Percentage of knowl-edge score on rights of mentally ill	100%	75.28 (15.5)	78.57	14.28	100

Table 3 reveals the statistics of overall scoring of the respondents level of knowledge regarding rights of mentally ill patients. It shows that 14 was full score that could be obtained and the maximum score obtained by the respondent was 14 (100%) and minimum score was 2 (14.28%). The table also shows the mean score was 10.54 and 75.28% and standard deviation was 2.17 and 15.5%. The Median score was 11 and 78.57%.
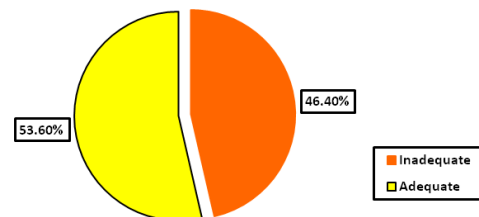
Fig 1: Level of knowledge of community people on rights of mentally ill patient (n=140)

Figure 1 illustrates the level of knowledge of the respondents about the rights of mentally ill patient which shows that among 140 respondents, 65 people (46.4%) have inadequate knowledge regarding human rights of mentally ill patients.

Table 4: Knowledge of community people on myths regarding mental illness (n=140)

Myths	Frequency	Percentage
Belief that mental health is not related to physical health		
Yes	72	51.4%
No	68	48.6%
Belief that mental illness is caused by supernatural power and is the result of a curse by evil spirit		
Yes	51	36.4%
No	89	63.6%
Belief that marriage can cure mental illness		
Yes	42	30%
No	98	70%
Belief that prevalence of mental illness are low in our country		
Yes	108	77.1%
No	32	22.9%
Belief that mental illness once acquired is life long		
Yes	58	41.4%
No	82	58.6%
Belief that the only place for the mentally ill is an asylum		
Yes	69	49.3%
No	71	50.7%
Belief that no effective treatment is available		

Yes	63	45%
No	77	55%
Belief that mental disorders are something ashamed		
Yes	89	63.6%
No	51	36.4%

Table 4 shows that the myth of community people towards mental illness is very high. More than three fourth (77.1%) of the respondents believed that there is low prevalence of mental illness in our country. More than half of the respondents i.e. 63.6% and 51% believed that mental disorders are shameful and mental illness is not related to physical health respectively. Likewise, 36.4% of the people believed mental illness is caused by supernatural power and evil. Similarly 30% of the respondents believed that marriage can cure mental illness, with 41.4% believed mental illness as life-long problem and 45% believed that no effective treatment is available for mental illness.

Table 5: Association of level of knowledge about rights of mentally ill patient with selected variables (n=140)

Variables	Level of Knowledge		χ^2	p- value
	Inade-quate No. (%)	Adequate No. (%)		
Age (in years)				
≤ 40	44 (43.1)	58 (56.9)	1.637	0.201
>40	21 (55.3)	17 (44.7)		
Gender				
Male	19 (54.3)	16 (45.7)	1.158	0.282
Female	46 (43.8)	59 (56.2)		
Education				
Illiterate	29 (51.8)	27 (48.2)	1.077	0.299
Literate	36 (42.9)	48 (57.1)		
Religion				
Hindu	45 (43.3)	59 (56.7)	1.623	0.203
Others	20(55.6)	16(44.4)		
Occupation				
Working	36(49.3)	37(50.7)	.511	0.475
Non working	29(43.3)	38(56.7)		
Ethnicity				
Dalit	29 (46.8)	33(53.2)	0.005	0.942
Non dalit	36(46.2)	42(53.8)		

Significant level of P-value at 0.05

Table 5 shows association between respondents' level of knowledge regarding rights of mentally ill patient and socio-demographic characteristics. There was no statistically significant association of respondents' level of knowledge with the demographic variables: age, gender, education, religion, occupation and ethnicity.

DISCUSSION

The present study assessed the knowledge of community people towards right of mentally ill people. The finding revealed that out of 140 respondents, 102 (72.9%) were below 40 years of age, three fourth (75%) were female, 62 (44.3%) belonged to Dalit group, 104 (88.7%) were Hindus by religion, 84 (60%) were literate and 51 (36.4%) were labor workers.

The finding of the study revealed that around half of the respondents (46.40%) had inadequate knowledge about right of mentally ill people. This finding was consistent with the other study which revealed that 56.7% had inadequate knowledge on right of the mentally people[8]. Another study also showed that 68% of adults have poor knowledge and 24% have average knowledge about the rights of mentally ill people.[9]

The current study showed no statistically significant association between the knowledge score of community people and demographic variables like age, gender, ethnicity, religion, education and occupation. This finding is consistent with the finding of the study conducted by Chendake et al[10] in 2014. Moreover, another study also showed no statistical significant association between knowledge of adults and age, sex, religion and monthly income. However, knowledge of adults was related to the type of family, no. of family members and educational status.[9]

The present found a high prevalence of myths related to mental illness with almost all i.e. 98.6% people believing that mentally ill people show bizarre behavior. About two third of the respondents (64.3%) believed that mental illness is not curable. Mental illness as contagious was believed by 28.6% of the people and 40.7% believed it as hereditary disease. More than half of the respondents i.e. 51.4%, 63.6% and 77.1% believed mental illness is not related to physical health, mental disorders are shameful and there is low prevalence of mental illness in our country respectively. Likewise, 30% people believed that marriage cures mental illness and 36.4% believed mental illness is caused by supernatural power. Forty one percent of respondents believed that mental illness once acquired is life-long. Similarly 45% respondents believed that there is no need of treatment for mentally ill people. Forty-nine percent of respondents believed that asylum is the place for treatment for mentally ill people. These findings are consistent with the findings of other study which showed that 39.4% of the rural respondents having belief that

mental illness is the punishment of God for their past sin. Similarly that study also showed that 33.7% subjects in rural areas and 40% in urban areas believed mental illnesses as untreatable.[11] Similarly, marriage can cure mental illness was believed by 11% of the respondents in a study.[12]

CONCLUSION

The knowledge about human rights of persons with mental illness is inadequate and prevalence of myths and misconceptions related to mental illness is high among the community people of selected community in Kaski district, Nepal. The continuing lack of sensitivity and awareness in the society towards the rights of mentally ill and the prevailing myths require help to create awareness through the trained health profession. The study suggests that there is an urgent need to take necessary steps to promote, protect and fulfill human rights of people with mental illness through providing appropriate care, awareness and educating the community and strengthening the legislations regarding the mental illness.

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Prevalence And Contributing Factors Of Low Back Pain Among Nurses In Tertiary Level Hospital

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ABSTRACT

Background: Low back pain is one of the common musculoskeletal health problems that occur most commonly in nurses among all Health workers. Different researches showed that nurses are suffering from low back pain due to many factors. This research was conducted to find the prevalence and contributing factors of low back pain among nurses.

Method: The descriptive cross-sectional study was done among 110 nurses by using stratified proportionate random sampling method. Semi structured self-administered questionnaire with single and multiple responses was administered among nurses after taking informed consent. Statistical package for social sciences (SPSS) 20 was used for analysis of data. Descriptive statistic (percentage and frequency) and inferential statistic (chi square) was used for the study.

Result: Among 110 nurses, 64.5% were affected from low back pain and prevalence of low back pain of one year and one week was 60% and 20% respectively. The present working area was strongly associated with low back pain (p=0.000). Prolong standing (64.54%), bending and twisting (64.54%), heavy workload (62.72%), working in same positions (58.18%) were perceived factors of low back pain but heavy mental workload had no relationship with low back pain. Taking rest (99.1%), physiotherapy (92.7%) and taking medication (82.7%) were the factors that decreased low back pain. There was increased work restriction (46.4) and less productive and creative (42.7) due to low back pain.

Conclusion: More than half of nurses were affected from low back pain. Prolonged standing, physical workload, bending and twisting were main contributing factors. Therefore, it is recommended to maintain proper body mechanics, periodic screening and timely rotation of nurses for the prevention of low back pain.

BACKGROUND

International Association for the Study of Pain (IASP) defined pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. The term low back pain (LBP) refers to pain in the lumbo-sacral area of the spine encompassing the distance from the first

lumbar vertebra to the first sacral vertebra where the lordotic curve forms. The most frequent site of low back pain is in the 4th and 5th lumbar segment. It can be either acute, sub acute or chronic in onset duration.[1] It occurs in similar proportions in all cultures, interferes with quality of life and work performance, and is the most common reason for medical consultation. [2] Moreover, low back pain is said to be among the leading musculoskeletal disorders that predominantly affect the working population in developed as well as in developing countries. [3]

Seventy two percent (72%) of Chinese hospital nurses experienced low back pain and nurses who reported manual handling of patients were 7.2 times more likely to report musculoskeletal symptoms.[4] Sun et. al. also found out that the prevalence of low back pain was 87% in ICU nurses and 64% in nurses working in other wards in a Chinese hospital study involving 4077 employees.[5] There is high prevalence of low back pain among nurses working in tertiary hospital of South India. [6]

In the context of Nepal, there is high prevalence of nursing due to lifting, bending, awkward posture, long standing.[8] In Nepal, there is limited research done in prevalence of low back pain among nurses and its impact among nurses

Thus we conducted this study with the objective to find out the prevalence and contributing factors of low back pain among nurses working in T.U. Teaching Hospital

METHODOLOGY

As the aim of this study was to find out the prevalence of LBP and contributing factors among the nurses, we chose a descriptive cross sectional study to determine the prevalence and contributing factors of Low Back Pain. The study site was Tribhuvan University Teaching Hospital at Maharajgunj, Kathmandu that is a tertiary level hospital and produces health manpower at various levels. We planned to conduct this study amongst more than 500 nurses working in different departments at TUTH.

Samples were selected from different wards proportionately on the basis of total population of nurses in selected area. Thus, four specialized units of TU Teaching Hospital namely Emergency (21.43%, 24), ICU (42.20%, 46), Operation theatre (O.T.) (25.97%, 29) and Maternity (especially labour room) (10.38%, 11) was chosen for the study.

A semi-structured questionnaire was developed to identify the prevalence, contributing factors of low back pain among nurses working in different departments of T.U.T.H and its impact in their daily life. Questionnaires based on following sections on the basis of objectives

An informed verbal consent was obtained from each respondent prior to data collection by explaining the purpose of the study. Ethical consideration was taken at the time of distributing questions and with Institutional Review Committee to ensure the right of the respondents.

The primary data was collected by providing self-administered semi-structured questionnaire to nurses working in different area of Hospital. Stratified sampling was used. Nurses in each ward were collected by making different strata i.e. Emergency (21.43%, 24), Maternity (especially labour room) (10.38%, 11), Operation Theatre (O.T.) (25.97%, 29) & Intensive Care Unit (I.C.U.) (42.20%, 46) according to number of nurses currently working in areas which were calculated by dividing total population in each ward by total population in specialized areas and obtained value was multiplied by total sample size (110). Equal portion of samples was further calculated by using random method in each stratum. Data collection was done within appropriate time of two weeks. Every precaution was taken to safeguard the Safety of right of participants. Semi structure questionnaire was used. Part of Nordic Questionnaires related to back pain was used to find out low back pain. Liker scale was be used to show nature of activities. Height was measured by using measuring tape and weight was calculated by using weighing machine. The collected data was checked for completeness of data, categorized data for coding and tabulated manually and stored safely and accurately. The tabulated data was interpreted by using descriptive statistics (percentage, frequency distribution, mean) and inferential statistics (chi-square) was used to show association between selected variables and low back pain and obtained p value. A confidence level of 95% was used during statistical analysis.

All the nurses with serious pathological disease e.g. tumors, tuber sclerosis etc., who had had other injuries within the past 12 months, for example sports injuries and motor vehicle accidents were excluded. Also, nurses who were pregnant, who had any history of obstetrical or gynecological surgery, who had less than 1 year experience or who were in leave during the collection period were excluded.

The study was conducted with aim to find out prevalence and contributing factors of low back pain among nurses working in tertiary level hospital. The study was divided into two categories one related to socio-demographic variables and another related to low back pain to get answers of the research questions. SPSS 20 was used to do analysis of data.

RESULTS

The demographic data are presented in table 1 and prevalence of low back pain is presented in table 2.

Table 1: Socio-Demographic Variables of the Respondents (n = 110)

Demographic variables	Frequency	Percentage (%)
Age		
20-30 Years	90	81.8
31-40 Years	17	15.5
41-50 Years	3	2.7
B.M.I		
Below 18, Underweight	5	4.5
18-24, Normal	76	69.1
24-30, Overweight	29	26.4
Marital Status		
Unmarried	60	54.5
Married	50	45.5
Educational Level		
Certificate in Nursing	46	41.8
Bachelor in Nursing	64	58.2
Year of Employment		
Less Than 5 Years	66	60.0
5-10 Years	25	22.7
10-15 Years	14	12.7
More Than 15 Years	5	4.5
Present Working Area		
Intensive Care Unit	46	41.8
Operation Theatre	29	26.4
Emergency	24	21.8
Maternity	11	10.0
Length of Stay in Present Area		
0-4 Years	87	79.1
4-8 Years	17	15.5
8-12 Years	6	5.4

Table 2: Prevalence of Low Back Pain (n=110)

Variables	Frequency	Percentage (%)
Low Back Pain Prevalence	71	64.5
One Year LBP Prevalence	66	60.0
One Week LBP Prevalence	22	20.0

The table 2 revealed that the prevalence of low back pain among nurses working in tertiary hospital was 64.5%. Table 2 revealed that the prevalence of low back pain among nurses during 12 months and during 7 days were 60% and 20% respectively. Thus from table 2, nurses working in T.U. Teaching Hospital were affected from low back pain.

Table 3: Duration of Low Back Pain in 12Months (n=66)

Duration of Low Back Pain in 12 Months	Frequency	Percentage (%)
Every Day	15	22.72
1 Week	37	56.06
1 Month	5	7.57
More than One Month	9	13.64

The table 3 findings showed that 25.5% respondents believed that low back pain did not disturb from doing normal activity and (40%) believed that disturbance in clinical practice due to low back pain.

Table 3, explained about time prevented from doing work during last 12 months which was further categorized into every day, 1 week, 1month and more than one month. Also, 81.39% respondents were prevented from doing normal work for 1 week due to low back pain and 51.92% respondents said that they had pain in central area.

Table 4: Association between Demographic Variables and Low Back Pain (n=110)

Demographic Variables	Had Low Back Pain	Did not have low back pain	p value (*)
Age			0.963
<30 Years	58	32	
> 30 Years	13	7	
B.M.I			0.081
< 24 kg/m^2	50	31	
>24 kg/m^2	21	8	
Marital Status			0.136
Married	36	14	
Unmarried	35	25	

			0.149
Year of Employment			
0-10 years	56	35	
10-15 Years	15	4	
Present Working Area			0.000
Intensive Care Unit	37	9	
Operation Theatre	18	11	
Emergency	15	9	
Maternity	1	10	

*chi square p value<_0.05 is statistically significant

The result from table 4 shows that there is significant association between present working area and low back pain (p Value=0.000) but there was no association between other socio- demographic variables and low back pain.

Table 5: Nurse's Type of Activities (n=110)

Type of Activities	Never	Some-times	Often	Always
Moving Patient in Different Positions	11(10.0%)	28(25.5%)	28(25.5%)	43(39.1%)
Assisting in Ambulation	18(16.4%)	42(38.2%)	30(27.3%)	20(18.2%)
Performing CPR	24(21.8%)	42(38.2%)	33(30%)	11(10%)
Bed Making	29(26.4%)	23(20.9%)	14(12.7%)	44(40%)
Lifting and Transferring Patients	7(6.4%)	22(20%)	25(22.7%)	55(50%)
Medications	11(10%)	20(18.2%)	4(3.6%)	75(68.2%)
Dressing	15(13.6%)	34(30.9%)	23(20.9%)	38(34.5%)
Providing Total Care to Patients	15(13.6%)	27(24.5%)	11(10%)	57(51.8%)

Table 6: Relationship between Severity of Pain and Absent from Work due to Low Back Pain (n=65)

Severity of pain	Absent from Work	Present on Work	p value(*)
Moderate Pain	9	18	0.001
Mild pain	5	33	

*chi square p value <_ 0.05 is statistically significant value

Table 6, explained about association between severity of pain and leave taken due to low back pain. The findings showed that there was strongly association between severities of pain and absent from work due to low back pain.

Table 7: Lost Working Days (n=19)

Lost Working Days	Frequency	Percentage
1-7 days	14	12.7
7-15 days	5	4.5

Table 7, explained about days taken leave due to low back pain. The findings showed that 12.7% respondents who had low back pain took leave for 1-7 days

The study reveals that majority of respondents believed that prolonged standing (98.2%) was the major causes of low back pain followed by physical workload (97.3%) and lifting patients (94.3%) respectively. Similarly taking rest (99.1%) during pain helped them to get relief from pain, which was followed by physiotherapy (92.7%).

The result also showed that there was increased work restriction (46.4%) due to low back pain. The findings also showed that in the opinion of respondents, follow good posture (98.2%) was necessary to decrease low back pain.

DISCUSSION

Out of 110 participants of the study, majority of the participants were age of 20-30 years and 69.1% participants have normal BMI and there was equal proportion of married and unmarried nurses. More than half (58.2%) of nurse participants had passed bachelor in nursing and 60% participants had work experience less than five years. Most of the nurses (79.1%) were working in present area for less than four years. According to units, 41.8% participants were taken from I.C.U. followed by operation theatre (26.4%), emergency (21.8%) and maternity (10%).

The prevalence of low back pain among nurses in our study is 64.5%. This result was consistent with that of Shrestha et al, and Jensen et al.[8, 9] Ajeesh et al. found that prevalence of low back pain were 65% and 70.6% respectively while the prevalence of low back pain among nurses in Japan was 54.7%.[10] This may due to use of advanced technologies in handling patient and lower nurse patient ratio. This was contrast with the prevalence of low back pain among dentists conducted in Nepal and prevalence of low back pain among home makers conducted in Bangladesh were 52.4% and 58.6% respectively.[11] This might be due to difference in work

activities. In this study, the prevalence of low back pain among nurses during last 12 months and last 7 days were 60% and 20% respectively. This result was inconsistent with that of study by Kumalo et al. in which twelve months prevalence was 21% and last seven days prevalence was 47%.[12] This study showed that prevalence of low back pain during last seven days was less than that during twelve 12 months and this was consistent with Tinubu et al.[13] The longer duration of time having low back pain during last 12 months was one week.

In our study, there was no association between age, level of experience, and low back pain (p value=0.9 and p value= 0.149) that was supported by Lela and Frantz in Kanombe Military Hospital, Africa where there was no association between age, level of experience, and low back pain.[14] Aljeesh & Al Nawajha[10] also showed that there was no association between B.M.I and low back pain.

In our study, there was no association between marital status and low back pain (p value=0.136) that was in contrast to study by Lela & Frantz (2013) where there was association between marital status and low back pain (p value=0.020).[14] Also, in our study, there was strong association between present working area and low back pain which was inconsistent with the study by Lela & Frantz.[14]

According to the unit placement, our results shows that the highest number of low back pain was among nurses working in ICU(37%), followed by operation theatre(18%) and least number was in the maternity ward (1%). This may be related to the various and regular manual work in ICU nurses in feeding, positioning and mobilizing patients but these findings are not similar to by Mugga et al.[15] in which only 12.8% nurses working in ICU had low back pain.

In this study, result showed that among the nurses who had LBP, 24.5% nurses complained that the exact area of pain was central followed by radiated to lower limbs (14.5%) and radiated to buttocks (8.2%). This was in agreement with a study by Wong et al.[16] who reported that 64.2% had central and 35.8% complained of low back pain radiated to lower limbs.

The study also showed that prolonged standing (64.54%), frequent bending and twisting (64.54%), heavy workload (62.72%), working in same positions for long period (58.18%) s and lifting heavy load patients (55.45%) were the most perceived causing low back pain among nurses. These findings of the study were similar to that of study by Aljeesh & Al Nawajha[10] who reported that prolonged standing (67.1%), lifting and transferring patients (62.90%), bending and twisting (58.70%) were major contributing factors of low back pain but was inconsistent with that of Wong et. al.[16] who found that 87.4% of nurses had LBP as a result of lifting heavy. Heavy mental workload was least contributing factors of the low back pain in the study which was in accordance with the study conducted by Mehrdad et. al. who reported that musculoskeletal symptoms were most associated with psychological factors especially stress and 71.9% participant experienced stressful working environment.[17] The study concluded that findings of the study showed that 99.1% respondents believed that low back pain was relieved by rest followed by physiotherapy (92.7%) and taking medication (82.7%) This result was in agreement with the study of Bejia, et al. who found that 70% improved with the rest.[18]

There is negative effect among nurses due to low back pain in their performance. According to the findings of the study, the negative effects were increased work restriction (46.4%), less productive and creative (42.7%), not perform job properly (40.0%), decrease my organizational commitment (33.6%) and decreasing interpersonal relation with patients (30%) which was supported by study conducted by Letvak S. et. al.[19] in North Carolina in 2012 who reported that low back pain had effect on work restriction (64.3%).

Low back pain has negative impact in the health and life of nurses. This will ultimately lead to decrease in quality of nursing services and jeopardizing patient care and leading to shortage of nurses. Thus respondents suggested some ways to decrease and prevent low back pain. The findings showed that follow good posture (98.2%), rotation to staffs time to time (93.6%) to different wards, use of automatic beds for patient positioning and proper maintenance equipment (91.8%), decrease workload (91.8%), performing exercise (90.0%), in service education (88.2%) and availability of assisted devices like belt, knee cap, chair with back rest (88.2%) and improves quality of life of nurses.

However there were some limitations of this study including time limitation of the study, single center and small sample size.

CONCLUSIONS

Low back pain is the common problems among health professionals' especially nurses and has strong association with current working unit (area) with prolonged standing, frequent bending and twisting, heavy workload and working in the same position for long periods being the most perceived risk factors. Low back pain also had negative effect in their work performance and thus recommended to nurses to use proper body mechanics during patient care and also recommended to institutions to rotate nursing staffs to various wards every few years to avoid mechanical stress and low back pain in nurses.

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Measurement of Anteroposterior diameters of normal brainstem by Magnetic Resonance Imaging

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ABSTRACT

Aim: The aim of this study is to assess the anteroposterior diameter of brainstem (midbrain, pons and medulla) of normal Nepalese people to establish normal ranges and to correlate the measurement with patient's age and gender.

Method: The study is a cross-sectional prospective study which is performed in Gandaki Medical College, Pokhara. The data is collected over the period of 5 months from May 2018 to September 2018. The data of total 103 patients are collected who underwent (Magnetic Resonance Imaging) MRI head. Measurements of sagittal diameter at predefined levels i.e. distance between upper border of pons to midway between superior and inferior colliculi (A) for midbrain, distance between anterior surface of pons to the floor of fourth ventricle (B) for pons and anteroposterior diameter perpendicular to the long axis of medulla just above the posterior kink at cervicomedullary junction for medulla oblongata were made and noted.

Result: The mean anteroposterior diameter of midbrain, pons and medulla oblongata was found to be 1.7048 ± 0.12 cm, 2.27 ± 0.13cm and 1.3 ± 0.088 cm respectively. The average ratio of sagittal diameter of pons to sagittal diameter of midbrain was 1.34 ± 0.099 cm and average ratio of sagittal diameter of pons to medulla oblongata was 1.75 ± 0.123 cm.

Conclusion: There was no statistically significant correlation of the sagittal diameter of midbrain, pons and medulla with patient's gender. The sagittal diameter of brainstem reached maximum at the age 20 and stopped increasing. The sagittal diameter of midbrain and medulla oblongata decreased slightly after the age of 50 and decreased significantly after the age of 70. There was no decrease in the sagittal diameter of pons after age.

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INTRODUCTION

Brainstem is the relay centre of the human brain which connects the spinal cord with the cerebrum. Previous studies were obtained regarding the brain neuro anatomic studies and ages effect, using advanced imaging technology. Linear measurements can be made rapidly without additional hardware or software and is suggested to be a reliable method to evaluate the size of brainstem. Investigations of aging effects on the brain stem are important, not only to understand normal aging, but also for comparative study of the pathophysiology of degenerative brain disorders.[1] Previous studies carried among normal individuals have shown that there are no significant differences in the size of brainstem between

males and females.[2, 3] Some studies have concluded that the changes in brainstem diameters according to age are non-significant.[2, 4] Whereas other suggests that there is significant decrease in the size of brainstem with age.[3] Some studies have described certain growth patterns of brainstem among different agegroup.[5]

Various pathological disease and syndromes are known involving brainstem. Cerebellar and brain stem atrophy are important features in Spinocerebellar Ataxia type-3. Recent neuropathologic studies have described additional brain stem involvement in Spinocerebellar Ataxia type-6.[6] The size and diameter of brainstem is decreased in atrophy and increased in gliomas. Measurements of brain diameter may be valuable in tumors or atrophic processes involving this part of the central nervous system. It is likely that some diffusely infiltrating tumors may be detected by changes in the size of the midbrain rather than by demonstration of differences in the signals due to changes in relaxation times.[7] Mid-sagittal MRI measurements of the midbrain area are reliable diagnostic criteria that can differentiate progressive supra nuclear palsy from other common extra pyramidal syndromes and normal aging. The mid-sagittal MRI measurements of the midbrain area can differentiate PSP from PD, MSAP and normal aging and these radiological measurements correlated well with the clinical aspects of the PSP syndrome.[8] MR based measurements are simple and reliable method with high sensitivity and specificity to identify PSP.[9] The midsagittal mesencephalic diameter measured on standard routine T2-weighted MR images can be used as a reliable measure to differentiate between patients with typical PD and those with PSP in vivo.[10]

The aim of this study is to develop a method of measuring the size of the brain stem by routine MRI and to determine brain stem dimensions in a normal population. Having knowledge about normal growth pattern and variations among different age group and gender can be helpful in determining pathological variations in the diameter of brainstem including neurodegenerative diseases.

METHOD

This is a cross sectional observational study, conducted at Gandaki Medical College Teaching Hospital & Research Centre (GMCTHRC), Pokhara-Lekhnath metropolitan city, Kaski.

Sample:

The study sample includes 103 patients who were referred to MRI and all normal MRI head scans were taken under the study and; all MRI with altered signal intensities in brainstem were excluded. Patients with no known pathologies or abnormalities of brainstem were included.

Patients with known pathologies or abnormalities of brain stem, non nepalese patients, uncooperative patients and MRI scans with significant noise and artifacts were excluded from the study.

The method of sampling is judgment sampling (non-probability sampling method) and period for sample collection was March 2018 to September 2018 (6 months).

All patients were examined using MRI machine SEIMENS MAGNETOM ESSENZA 1.5 Tesla MRI. Protocol used was T1 weighted sagittal image with TR-500ms, TE-8.9ms, Slice thickness- 5mm, distance factor 30% of slice thickness, Concatenations- 1, FOV 230 and FOV phase 100%.

Sampling technique:

The method of sampling is judgement sampling (non-probability sampling) method.

Data collection:

Performa was made to collect the measured values of anteroposterior diameter of midbrain, pons and medulla oblongata. Measurements were made on T1 weighted sagittal image at three different levels, i.e. distance between upper border of pons to midway between superior and inferior colliculi (A) for midbrain, distance between anterior surface of pons to the floor of fourth ventricle (B) for pons and anteroposterior diameter perpendicular to the long axis of medulla just above the posterior kink at cervicomedullary junction for medulla oblongata. Patient was positioned supine with sagittal reference line at mid sagittal plane of head and axial scan line at glabella.

Figure 1: Sagittal T1 weighted image taken from SIEMENS MAGNETOM

ESSENZA 1.5 Tesla with measurements of anteroposterior diameter of brainstem

Data analysis

Statistical analyses were carried out with the help of SPSS version 25 and Microsoft Excel. The mean, standard deviation, and correlation between anteroposterior diameters of midbrain, pons and medulla at above mentioned levels and pons to midbrain ratio and pons to medulla ratio was calculated and the values were compared between different age group, and gender and the results were expressed in tables, figures and the scatter plot diagrams. For inferential data, independent sample T-tests were applied to correlate the measurements with gender and age.

Correlation

Correlation is the statistical technique that can show whether and how strongly pairs of variables are related. Correlation works for quantifiable data in which numbers are meaningful, usually quantities of some sort. It cannot be used for purely categorical data. Pearson's correlation coefficient also referred as Pearson's r, Pearson product-moment correlation coefficient or bivariate correlation, is a measure of the linear correlation between two variables X and Y. It is the covariance of the two variables divided by the product of their standard deviations.

"r" value

The main result of correlation is called correlation coefficient (or "r"). It ranges from -

1.0 to +1.0. The closer the r is to +1 or -1, the more closely the two variables are related. If r is close to 0, it means there is no relationship between the variables. If r is positive, it means that the two variables are directly related. Whereas if r is negative, it means that the two variables are indirectly related (often called as inverse correlation).

RESULTS

The data was collected from 103 test subjects with no known brainstem abnormalities, 51 male and 52 females with age ranging from 8 years to 81 years. Patient's age, gender, anteroposterior diameters at the level of midbrain, pons and medulla oblongata, pons to midbrain ratio and pons to medulla ratio was recorded. Detailed results and outputs are shown in the tables and figures below.

Table 2: Distribution of Sample according to gender

Gender	Frequency	Percentage
Male	51	49.5 %
Female	52	50.5 %
Total	103	100 %

Table 3: Distribution of sample according to different age groups

Age groups	Frequency	Percent
less than 20	14	13.6 %
20-29	9	8.7 %
30-39	19	18.4 %
40-49	12	11.7 %
50-59	13	12.6 %
60-69	14	13.6 %
70 and above	22	21.4 %
Total	103	100 %

Table 4: Maximum, Minimum, mean and standard deviations of mesencephalic diameter, pontine diameter medullary diameter, pons to midbrain ratio and pons to medulla ratio

Variables	N	Mini-mum	Maxi-mum	Mean	Std. Devia-tion
Mesencephalic diameter	103	1.46	1.98	1.7048	0.11989
Pontine diameter	103	1.99	2.63	2.2739	0.13223
Medullary diameter	103	1.08	1.51	1.3032	0.08833
Pons to Midbrain Ratio (B/A)	103	1.13	1.61	1.3385	0.09912
Pons to Medulla Ratio (B/C)	103	1.42	2.10	1.7502	0.12263

Table 5: Mean and Standard deviations of diameter of midbrain, pons and medulla oblongata with respect to gender

sex		Mesencephalic diameter	Pontine diameter	Medullary diameter
Male	Mean	1.7000	2.2796	1.3159
	N	51	51	51
	Std. Deviation	0.12991	0.11269	0.08909
Female	Mean	1.7094	2.2683	1.2908
	N	52	52	52
	Std. Deviation	0.11027	0.14985	0.08663

Table 6: Mean and Standard deviations of diameter of pons to midbrain ratio and pons to medulla ratio with respect to gender

Sex		Pons to Midbrain Ratio (B/A)	Pons to Medulla Ratio (B/C)
Male	Mean	1.3467	1.7382
	Std. Deviation	0.09941	0.11973
Female	Mean	1.3303	1.7619
	Std. Deviation	0.09913	0.12545

Table 7: correlation and P value of age, diameters of pons, medulla and midbrain, pons to medulla ratio and pons to midbrain ratio with age

		Mesen-cephalic diameter	Pon-tine diame-ter	Med-ullary diame-ter	Pons to Midbrain Ratio (B/A)	Pons to Medul-la Ratio (B/C)
Age	Pearson Correlation	-0.434**	0.103	-0.137	0.504**	0.221*
	Sig. (2-tailed)	<0.001	0.301	0.169	<0.001	0.025

Table 8: Table showing mean and standard deviations of AP diameters of midbrain, pons and medulla oblongata, pons to midbrain ratio and pons to medulla ratio on the basis of different age groups

Age Groups		Mesen-cephalic diameter	Pontine diame-ter	Med-ullary diameter	Pons to Midbrain Ratio (B/A)	Pons to Medulla Ratio (B/C)
<20	Mean	1.7357	2.2136	1.2950	1.2779	1.7148
	Std. Deviation	0.10689	0.14216	0.10486	0.08880	0.11282
20-29	Mean	1.7778	2.2567	1.3233	1.2721	1.7103
	Std. Deviation	0.12387	0.12787	0.09987	0.07240	0.11017
30-39	Mean	1.7684	2.2758	1.3184	1.2900	1.7326
	Std. Deviation	0.10725	0.10292	0.08745	0.07459	0.12549
40-49	Mean	1.7342	2.3242	1.3250	1.3419	1.7555
	Std. Deviation	0.08554	0.14241	0.08085	0.08836	0.07834
50-59	Mean	1.6708	2.2985	1.3285	1.3770	1.7337
	Std. Deviation	0.09412	0.14439	0.06149	0.07391	0.13825
60-69	Mean	1.7186	2.3057	1.2907	1.3432	1.7915
	Std. Deviation	0.12184	0.15174	0.08544	0.05500	0.14039
≥70	Mean	1.5955	2.2555	1.2682	1.4183	1.7846
	Std. Deviation	0.09226	0.12211	0.09027	0.11367	0.12781

Table 9: Independent sample t-test between male and female

		Sig.	T	Difference	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Upper	Lower
Mesencephalic diameter	Equal variances assumed	0.393		101	0.692	-0.00942	0.02373	-0.05649	0.03764
	Equal variances not assumed			97.768	0.693	-0.00942	0.02376	-0.05658	0.03774
Pontine diameter	Equal variances assumed	0.129	0.433	101	0.666	0.01134	0.02616	-0.04056	0.06324
	Equal variances not assumed		0.435	94.669	0.665	0.01134	0.02609	-0.04046	0.06314
Medullary diameter	Equal variances assumed	0.326	1.450	101	0.150	0.02511	0.01731	-0.00923	0.05946
	Equal variances not assumed		1.450		0.150	0.02511	0.01732	-0.00924	0.05947

The mean, standard deviation, maximum and minimum values of anteroposterior diameter of midbrain, pons and medulla oblongata, pons to midbrain ratio and pons to medulla ratio was calculated and presented in table 3.

The mean values of anteroposterior diameter of midbrain, pons and medulla oblongata were measured to be 1.7048 ± 0.12 cms, 2.27 ± 0.13 cms and 1.3 ± 0.088 cms respectively. The mean values of pons to midbrain ratio was 1.34 ± 0.099 cms and pons to medulla ratio was 1.75 ± 0.123 cms (table 3).

Correlation analysis of different variables was done with age. The results are presented in Table 8. At level of significance 0.01, there was significant correlation of mesencephalic diameter with age. The correlation was negative. (r = -0.434, P<0.01).

There was significant positive correlation of pons to midbrain ratio (B/A) with age at level of significance 0.01. (r = 0.504, P<0.01). At level of significance 0.05, there was significant positive correlation of pons to medulla ratio with age. (r = 0.221, P=0.25)

There was no significant correlation of pontine diameter and medullary diameter with age. (Table 8) Independent sample T-test was performed to check whether there is significant difference in the mean anteroposterior diameters of midbrain, pons and medulla between males and females. This study found that there was no significant differences of anteroposterior diameter of mesencephalon ($T_{(101)}$= -0.393, P=0.692), anteroposterior diameter of pons ($T_{(101)}$=0.433, P=0.660) and anteroposterior diameter of medulla oblongata ($T_{(101)}$=1.45, P=0.15) between males andfemales.

DISCUSSION

The objective of this study was to assess the anteroposterior diameter of brainstem (midbrain, pons and medulla oblongata). The measurements of diameters between upper border of pons to midway between superior and inferior colliculi (A) for midbrain, distance between anterior surface of pons to the floor of fourth ventricle (B) for pons and anteroposterior diameter perpendicular to the long axis of medulla just above the posterior kink at cervicomedullary junction was taken of Nepalese by using sagittal T1 images using 1.5 tesla MRI at Gandaki MedicalCollege.

A total of 103 subjects were taken in which 51 (49.5%) were male and 52 (50.5%) were female (Table1). The age of the patients ranged from 8 years to 81 years with average age 47.37. The minimum sample size taken for similar study was four[2] and the maximum was 275.[5]

Suh et al. concluded that there was no statistical difference of each dimension between male and female, and among different ages supporting the conclusions made in this study.[3]Rahiget al[4]concluded in his study that there was no significant correlation of the anteroposterior diameter of brainstem with gender supporting my study. In his study, he concluded that the diameter of brainstem decreased with age.

The diameter of midbrain was found to decrease with respect to age which is supported by the study done by Nagwan Elhussein et al.[5] which concluded that brainstem aging- associated degeneration seems to be confined to the midbrain. A study done by Raininko et al[6] concluded that there was no significant correlation of the diameters with patient's gender supporting my study.A study conducted by Murshed et al[7] found that larger brain stem in males, which explains the correlation between supratentorial larger brain size in males and the brain stem structures.

In a study done by Looi[11] linear and volumetric analysis

was done of different brain structures with respect to age. This study concluded that there was highly significant age related decline in linear and cross-sectional area measurements of midbrain and no significant decline in pons and medulla supporting the conclusions of this study.

CONCLUSION

The mean anteroposterior diameter of midbrain, pons and medulla oblongata was found to be 1.7048 ± 0.12 cm, 2.27 ± 0.13cm and 1.3 ± 0.088 cm respectively. The average ratio of sagittal diameter of pons to sagittal diameter of midbrain was 1.34 ± 0.099 cm and average ratio of sagittal diameter of pons to medulla oblongata was 1.75 ± 0.123 cm.

There was no statistically significant correlation of the sagittal diameter of midbrain, pons and medulla with patient's gender. There mesencephalic diameter of the decreases with age, probably due to age related atrophy. But there was no statistically significant correlation of pontine diameter and medullary diameter with age.

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A Study on Incidence and Patterns of Acute Poisoning Cases in an Emergency Department of Western Region of Nepal

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ABSTRACT

Introduction: Poisoning is a common cause of morbidity and mortality in the Nepal. The objective of our study is to evaluate the incidence and pattern of acute poisoning cases admitted to the Gandaki Medical Teaching Hospital.

Methods: This is cross-sectional observational study carried out among acute poisoning cases attending emergency department from January 2015 to December 2017.

Results: A total of 156 poisoning cases were treated of which female patients were 71% and the highest numbers (36.5%) of patients were in the age group 21 to 30 years. Organophosphates poisoning was the commonest poison diagnosed among 28.8%, followed by rodenticide poisoning found among 27.5%. Psychiatric illnesses were present among 94.8% of our patients. The most common diagnosis were Anxiety and depression 46.6% followed by family dispute among 30.4%. Above fifty percent of our patients attended our emergency department within 2 hours our ingestion of poisons.

Conclusion: Female and young people are at greater risk of acute poisoning. Pesticides were the most common agent. The reasons for the poisoning need to be carefully evaluated and proper support and advice must be given in poisoning cases.

INTRODUCTION

Acute poisoning account for significant morbidity and mortality worldwide, especially in developing countries like Nepal.[1] As per World Health Organization (WHO) estimates 0.3 million people die every year due to various poisoning agents.[2] Poisoning is one of the major cause of hospitalization through emergency department and is a major public health problem in Nepal.[3]

The nature of use of poisons varies in different parts of the world and may vary even in different parts of the same country depending upon the socio-economic factors and culture diversity. In industrialized countries commonly uses analgesics, tranquillizers and antidepressants agent for mode of poisoning. Whereas developing countries which are agriculture dominant- pesticides agents are the most common methods used. [4,5]

Knowledge of general pattern of poisoning in a particular region can help in early diagnosis and treatment, thus contributing to a decrease in mortality and morbidity. Hence the present study was conducted with the main objective to study the incidence and pattern of acute poisoning cases attending Emergency department of

Gandaki Medical Teaching Hospital, Pokhara, Nepal.

METHODS

This is cross-sectional observational study carried out among acute poisoning cases attending the Emergency department of Gandaki Medical College Teaching Hospital from January 2015 to December 2017 was enrolled in our study. Approval of this study was obtained from Institutional Review Committee and informed consent was taken from the patients or their family members.

The inclusion criteria included the poisoning cases attending the Emergency Department of Gandaki Medical College Teaching Hospital. The collected data was reviewed verified and statistically analyzed using the Statistics Packed for Social Science (SPSS) version 16 and Microsoft Excel 2007. Descriptive statistics was used for all studied variables.

RESULTS

One hundred and fifty six patients were included in the study. Our study patient age ranged from two to 69 years. Maximum number of patients-36.5% belonged in the age group category of 21-30 years followed up by 29.1% in age group of 11 to 20 years (Figure 1). There were 111 females and 45 males. Maximum above ninety percentage of our patient mode of poisoning was suicidal intention. Almost 60.2% of our patients were married and 37.1% of individuals were unmarried. Almost sixty percentages of our patients were from around Pokhara valley area and rest of them was from the rural areas of the districts (Table 1).

Psychiatric illnesses were present among 94.8% of our patients. The most common diagnosis was Anxiety and depression was 46.6%, family dispute among 30.4% and mood disorder among 7.4% of our patients (Table 2). Among the types of poisoning- Organophosphates poisoning was the most common poison diagnosed among 28.8% of our patients, Rat poisoning was found among 27.5% and other poisons were found among 16.6% (Table 3). Above fifty seven percent of our patients attended our emergency department within 2 hours our ingestion of poisons followed by twenty eight percent within 2-4 hours and almost fifteen percent after 4 hours of poison ingestion (Table 4).

Age wise Distribution
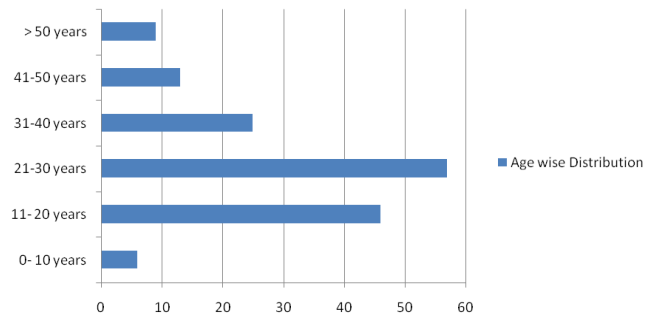
Figure 1: Age wise distribution of patients.

Table 1: Socio demographic distribution of study patients (N=156)

Patient characteristics	Number (%)
Sex	
Male	45(28.8%)
Female	111(71.2%)
Mode of poisoning	
Suicidal	148(94.8%)
Accidental	8(5.2%)
Socioeconomic status	
Low	4(2.6%)
Medium	152(97.4%)
Urban and rural distribution	
Rural	56(35.9%)
Urban	100(64.1%)
According to marital status	
Married	94(60.3%)
Unmarried	58(37.2)%
Divorced	4(2.5%)

Table 2: Psychiatric illness analysis of poisoning patients (n = 148)

Psychiatric Illness	Number (%)
Anxiety and depression	69(46.6%)
Family dispute	45(30.4%)
Excess stress and anger	11(7.4%)
Economic crisis	10(6.7%)
Fail in exam	7(4.7%)
Substance abuse	6(4.2%)

Table 3: According to type of poison (n = 156)

Types of Poisoning	Number (%)
Organophosphorous poisoning	45(28.8%)
Rodenticides	43(27.6%)
Paracetamol	6(3.8%)
Mushroom poisoning	4(2.5%)
Other drugs	12(7.7%)
Other poison	26(16.7%)
Unknown	20(12.9%)

Table 4: Time elapsed since exposure to hospital arrival (n=156)

Hospital Arrival time	Number (%)
Less than 2 hrs	90(57.6%)
2-4 hrs	45(28.8%)
>4hrs	21(13.6%)

DISCUSSION

Poisoning is an increasing common social problem in developing countries like Nepal. Globally, most suicides in low- and middle-income countries are caused by pesticide poisoning. It is estimated that 300 000 people die annually in Asia from pesticide ingestion.[6] This is the first study done on incidence and pattern of poisoning in Emergency department of Gandaki Medical College Teaching Hospital, Pokhara Nepal.

In our study patient age group varied from 2 years to 69 years. Maximum numbers of patients 36.5% were in age group of 21-30 years. This highlights that adolescents and young adults are the vulnerable age group with increased risk in our community. This finding were similar with study done in Palpa were 24.6% of patients were in the similar age group.[7] Suvedi et al[8] in a study done at Bir Hospital showed that 14 to 29 years age group were the most age group presenting with poisoning cases in the emergency.

The present study found that the incidence of poisoning were more common in female patients compared to male patients. There were 72% of female attended our emergency department compared to male 28% of the total patients. These findings were similar with study done at Manipal teaching hospital, were female patients were 54.08%.[9] A study done in emergency department of Turkey showed female to male ratio of 3.5:1.[10] Hence

is shows higher prevalence of poisoning cases were reported in female patients compare to males. The reason for the finding may be that females were more emotionally unstable. They are economically dependent on male counterpart. They may suffer from domestic violence and abuse in the family and community as well.

Our study showed above 90% of poisoning cases was due to suicidal intentional and rest was due to accidentally. In study done at Bir Hospital by Singh et al[3] showed 97% of cases were due to intentional poisoning for suicidal attempt. This shows there is increasing trend of intentional poisoning in the community may be due to undiagnosed psychiatric conditions in the patients like depression and low self esteem. Homicidal poisoning was mainly confined to the effects made by robbers to rob people by giving some fruit juice mixed with sedative agents to drink for the purpose. Demographical pattern showed maximum patient were from around Pokhara valley region as the city is the province capital and people living here for more job opportunities and better education facility.

On evaluation of the co-morbidity health status of our patients showed psychiatric illness analysis commonly present were anxiety and depression 46.6%, family dispute among 30.4% and mood disorder among 7.4%. There is increase incidence with mental disorder in our patients. Psychiatric evaluation and consultation with support in the community is very important in management of poisoning in Nepal.

Organophosphorus compound was the most common poison found in our study. Almost 30 percent of our patient had taken organophosphorus substance for suicidal intention. These findings were consistent with other studies done in Kafle et al[11] and Poudyal et al.[12] Second in the list was rodenticide containing phosphides substance in 25 %. The reason to have increased cases of these substances for poisoning is due to easy and wide-spread availability in our market for agriculture insecticides purposes. In this study, medicinal preparation used for poisoning was 18%. Paracetamol and other drugs available over the counters like analgesics and anxiolytics were more commonly used.

In this study, most of patients 64 % had arrived hospital within two hours after ingestion of poison. In study done by Singh et al almost similar number of patients had arrived hospital within 3 hours.[3] As our hospital being in center part of Pokhara, we expect patients visiting our hospital.

CONCLUSIONS

In developing country like Nepal, poisoning is important public health importance concern hence appropriate intervention program is needed. Female and young people are at greater risk of acute poisoning. Deliberate self harm was the more common reason for poisoning in our subjects. Pesticides were the most common agent. The reasons for the poisoning need to be carefully evaluated and proper support and advice must be given in poisoning cases. Further multi-center study is needed to study the incidence and pattern of poisoning in Nepal.

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Association of Fingerprints with the ABO Blood grouping among students in Gandaki Medical College

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ABSTRACT

Introduction: Dermatoglyphic study is undoubtedly the most reliable, convenient and acceptable method of individual identification since the fingerprint pattern persist same throughout the life and no two individual has similar pattern. Both blood group and dermatoglyphic pattern have genetic inheritance so an attempt has been made to analyze their correlation with gender and blood group of an individual.

Methods: A cross sectional study was carried out in 200 students (105 male and 95 female), aged 17to 27 years, with prior knowledge of their blood group, of Gandaki Medical College, Pokhara, Nepal. The fingerprint patterns of both hands were recorded and patterns were observed.

Results: Loop was the most common pattern registering 51.8% followed by whorls, arches and composite in both genders. Frequency of loop was higher in both male and female. Frequency of whorl was comparatively higher in male (41.3%) compared to female (38.8%). Similarly arch was more common in female (9.89%) than in male (5.05%).Frequency of loop was highest in all blood groups in both male and female; followed by whorls, arches and composite. Both loops and whorls were highest in individual with O+ blood group. Arch was found to be highest in B+ subjects.

Conclusion: There was no significant association between distribution of fingerprint patterns, blood group and gender and thus prediction of gender and blood group of a person is not possible based on his fingerprint pattern.

INTRODUCTION

The texture and appearance of skin covering palmar and plantar surfaces is different than the one covering rest of human body where the skin is continuously wrinkled to form narrow minute ridges known as friction ridges.[1] Fingerprint pattern appears first during 12[th]to16[th] week of gestation and is completed by 20th week of intrauterine life.[2]These patterns are determined partly by heredity and partly by accidental and environmental influence, which produce stress and tension in their growth during foetal life.[3] It remains uniform and static in its physical characteristics throughout the individual's life.[4]Fingerprint is undoubtedly the most reliable and acceptable evidence till date in the court of law. Two persons with identical fingerprint is about one in 64 billions.[1] So it can be used

as the most convenient, reliable and cheapest method of individual identification. Depending upon the arrangement of papillary ridges, Sir Henry Galton classified fingerprints into four major types: Loop (65%), Whorl (25%), Arch (7%) & Composite (2-3%).

Among nineteen blood groups identified till date, ABO and Rh blood group system are of major importance.[5,6] ABO blood group discovered by Karl Lansteiner (1901) can further be classified as A, B, AB and O according to the presence or absence of surface antigen on their red blood cells. Rh blood group is again classified as Rh- positive or Rh- negative on the basis of presence or absence of D antigen.[1,6,7] As blood group system and dermatoglyphics have genetic inheritance, studies have shown that there is association between finger print pattern and blood group.[4,8] The objectives of our study were to find outthe distribution of different fingerprint patterns and blood group among medical students of Gandaki Medical College, Nepal and also to correlate between gender, ABO and Rh blood group with dermatoglyphic pattern.

METHODS

Random cross sectional study was conducted among 200 students (105 male, 95 female), aged 17-27 years, of Gandaki Medical College Teaching Hospital and Research Center, Pokhara. After obtaining clearance from Institutional Review Committee of Gandaki Medical College, both genders of students of all discipline with prior knowledge of their blood group were included for the study upon their consent. Subjects with permanent scars on their fingers, injury, birth defect or disease were excluded. Each subject was asked to wash his / her hands thoroughly with soap and water and dry them using a towel. Then they were asked to press their fingertip on stamp pad and then to A4 paper to transfer the fingerprint impression by rolling the fingers over fingerprint blocks prepared with other information like name, age, sex and blood group. The participants were asked to be careful not to double roll the prints in order to avoid smudging of the print. And the patterns were observed with the help of a powerful hand lens and categorized as Loop, Whorl, Arch or Composite. The ridge lines that flew from one

side, swept up in the center like a tent and then curve back on the same side where they entered was classified as Loop. Similarly, as the central core was surrounded by number of ridge lines to form a circle or spiral, that pattern

was classified as Whorl. Arch was coded when the ridge lines

flew from one side, rose in the middle of the pattern and flew to next side. When more than one of the above pattern was seen in the same fingerprint, it was distinguished as Composite.[7]Finally data were evaluated and analysed by Chi square ($\chi 2$) testor Fisher Exact testusing SPSS 23.

RESULT

Table 1: Distribution of Finger-print patterns in Male and Female participants

Gender	Finger print patterns in all fingers in both hands N= 2000(200 participants X 10 fingers)			
	Loop n(%)	Whorl n(%)	Arch n(%)	Composite n(%)
Male	554 (52.7%)	434 (41.3%)	53 (5.05 %)	9 (0.85%)
Female	482 (50.7%)	369 (38.8%)	94 (9.89%)	5 (0.53%)
Total	1036	803	147	14

On analysis of 2000 fingerprint patterns, it was found that loop was the most common pattern registering 51.8% followed by whorls, arches and composite in both genders. Frequency of loop was higher in both male and female. Frequency of whorl was higher in male (41.3%) than in female (38.8%). Similarly arch was more common in female (9.89%) than in male (5.05%).

Table 2: Distribution of blood groups according to Gender

Blood group	Male n(%)	Female n(%)	Total n
A+	21 (20%)	31 (32.6%)	52
B+	34 (32.4%)	27 (28.4%)	61
AB+	7 (6.7%)	11 (11.6%)	18
O+	42 (40%)	26 (27.4%)	68
O-	1 (0.9%)	0 (0%)	1
Total	105	95	200

Table 2 shows the distribution of blood group. Majority of the subjects presented blood group O+ (34%) followed by B+ (30.5%) , A+ (26%) and AB+ (9%). Only 1 male presented O- blood group. Blood group O+ was predominantly found in male followed by B+ but in female, there was higher frequency of A+ followed by B+.

Table 3: Pattern of Finger Prints in Different Blood Groups in Male and Female participants

Blood group	Fingerprint pattern	Male	Female	P value
A+	Loop	20	27	0.637 #
	Whorl	15	27	0.282 #
	Arch	6	9	0.971 *
	Composite	2	2	1 #
B+	Loop	30	27	0.122 #
	Whorl	28	19	0.269 *
	Arch	9	12	0.142 *
	Composite	2	1	1 #
AB+	Loop	7	11	NA
	Whorl	6	10	1 #
	Arch	2	2	1#
	Composite	2	0	0.137 #
O+	Loop	39	24	1 #
	Whorl	33	20	0.873 *
	Arch	9	10	0.128 *
	Composite	3	1	1 #
O-	Loop	1	0	NA
	Whorl	0	0	NA
	Arch	0	0	NA
	Composite	0	0	NA

Fisher Exact test*Chi Square test

DISCUSSION

In the present study, there is no significant association between gender, blood group and fingerprint pattern. This finding is consistent with those observed by Dennis E.O.Eboh[9], Geipel G[10], and Shrestha DB.[11]

Gender and blood group

In our study, we observed that maximum participants belonged to blood group O+ followed by B+, A+ and AB+. This finding is consistent with those observed by A.U. Ekanem.[7] Among Rhesus positive groups, AB+ was the least common type and this is also supported by Deepalaxmi[4], Shivare PR[6], Verma U.[12] Male participants had higher frequency of O+ and female had A+ blood group in our study which is similar to those of Nigerian population (AU Ekanem)[7] but dissimilar to Joshi S[1] where female had more B+ blood group.

Rh blood group

In the present study, we observed that maximum 199 (99.5%) of the studysubjects belong to Rh positive

group. Our findings match with those of Verma U[12] and Bharadwaja et al[13].

Fingerprint pattern

The general distribution pattern of finger print was same for the all blood groups i.e. High frequency of loops, moderate of whorls and low of arches and composite which is in accordance to the findings of Joshi S[1], Salmani D[4], Ekanem AU[7], Verma U[12], Gowda and Rao[14], Sangam MR[15], Desai et al[16]. The incidence of Arch was more in female. Similar result was observed by Desai et al.[16] Loop was more common in male in our study. This is inconsistent to that observed by Joshi S[1] and Desai et al[16] as they reported whorl was more common in male.'

In our study, O+ subjects had more loops. This agrees with that observed by Mehta and Mehta[5], Ekanem AU[7] and Sangam MR.[15] Similarly arch was more frequent in B+ subjects according to our study. Same finding was reported by Sangam MR.[15] But it disagrees with the findings of Mehta and Mehta[5] who reported that B blood group had more whorls and AB had more arch.Verma U[12] reported that O- subjects had more whorls but our study showed more loops.

CONCLUSION

This study showed no significant association between gender, blood group and dermatoglyphic pattern. Hence it can be concludedthat the prediction of blood group and gender may not be possible with the study of finger print patterns.

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Maternal, Fetal and Newborn Outcome with Respect to Anemic Status of Women Admitted in Maternity Ward of BPKIHS

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ABSTRACT

Background: Anemia is a common problem in pregnancy particularly in developing countries. In Nepal, the prevalence of anemia in pregnancy is 48%. It is defined by WHO as hemoglobin level less than 11gm/dL in pregnancy. It leads to a number of threats to mother, fetus and newborn.

Objectives: The objective of the study was to assess the maternal, fetal and newborn outcome with respect to anemic status of women admitted in maternity ward of BPKIHS, Dharan, Nepal.

Methods: A descriptive cross-sectional study was conducted among the 20 to 35 years women admitted in maternity ward of BPKIHS. Total 193 respondents were included in the study by purposive sampling technique. Out of 193 respondents, 78 were anemic and 115 were non-anemic. Maternal, fetal and newborn outcome among all the respondents were assessed by interview and review of records. Pearson Chi-square test was used to find the association between two categorical variables.

Results: Maternal outcomes such as preterm delivery, mode of delivery and fetal and newborn outcomes such as abnormal fetal heart rate, IUGR, LBW, low APGAR scores at 1 minute and at 5 minutes, need for resuscitation and need for admission in ward/nursery/NICU were significantly associated with anemic status of women at p value <0.05. The prevalence of anemia among the pregnant women was 40.5%.

Conclusion: Maternal outcome such as preterm delivery, cesarean section were associated with anemia. Regarding the fetal and newborn outcome; abnormal fetal heart rate, IUGR, low birth weight, APGAR scores below 7, need for resuscitation, need for admission in ward/nursery/NICU were associated with anemia.

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INTRODUCTION

Pregnancy and child birth is a normal physiological process, but it is associated with certain risk to the life of both mother and baby. Anemia is defined by WHO as "hemoglobin level less than 11 gm% in pregnancy. It is divided into three types viz mild degree (9 to 10.9 gm%), moderate degree (7.0 to 8.9 gm%) and severe degree (less than 7.0 gm%).

According to World Health Organization (2008) globally, anemia affects 1.62 billion people which corresponds to 24.8% of the population. The highest prevalence is in preschool-age children and the lowest prevalence is

in men. However, the population group with the greatest number of individuals affected is pregnant women. Among the pregnant women, 41.8% are anemic while 30.2% non-pregnant women are anemic. At the national level, anemia is considered a severe public health problem when the prevalence is equal to or greater than 40 percent in a vulnerable group.[1]

Table 1: Public health significance of anemia

Anemia prevalence	Public health significance
>40%	Severe
20 - 39%	Moderate
5 - 19%	Mild
0 - 4.9%	Normal

Based on these criteria, anemia is a severe public health program in Nepal; being almost a half of the pregnant women (48%) anemic.[2]

Though, there are many studies on anemia in pregnancy in Nepal but relatively few studies have been done in the maternal and fetal outcome. Hence, this research will provide a new platform for the personnel of related field including the policy makers to modify the current plans and policies and develop new action plans in this field. Keeping all this in view, this study was conducted to identify maternal, fetal and newborn outcome due to anemia in pregnancy.

Statement of the problem

A study to assess the maternal, fetal and newborn outcome with respect to anemic status of women admitted in maternity ward of BPKIHS, Dharan, Nepal.

Objectives

- To assess the maternal, fetal and newborn outcome with respect to anemic status of women admitted in maternity ward of BPKIHS.

- To find the association between maternal, fetal and newborn outcome with selected variables.

METHODS

Study Design

Descriptive cross-sectional study design was adopted in order to assess the maternal, fetal and newborn outcome with respect to anemic status of women admitted in maternity ward of BPKIHS, Dharan, Nepal.

Study Setting

Study was conducted at maternity wards of BPKIHS, Dharan, Nepal. BPKIHS is a 700 bedded tertiary level hospital. Among many facilities available at BPKIHS; Gynecology and Obstetric facility remains one of the significant facilities. In an average about 1000 to 1500 deliveries take place monthly. Postnatal mothers are shifted to different wards such as postnatal ward, MCH I, MCH II and Gynec Ward. Approximately 60 beds are allocated for postnatal mothers. Data were collected in those wards of BPKIHS where postnatal mothers were admitted.

Study Population

All postnatal women admitted in maternity wards of BPKIHS were the population of this study.

Sample

All postnatal women who met the eligibility criteria were the sample of this study.

Sample Size

Total of 193 samples were taken. Among them 78 were anemic and 115 were non-anemic.

Sampling Technique

Purposive sampling technique was adopted.

Eligibility criteria

Inclusion criteria

All postnatal women within the age group 20 to 35 years admitted in maternity wards of BPKIHS during the study period were included in the study.

Exclusion criteria

1. Those women who were not willing to participate in the study.

2. Those postnatal women who didn't have laboratory reports of hemoglobin test done during first trimester and third trimester of pregnancy.

3. Women who had multiple pregnancy, oligohydraminous/polyhydraminous, gestational diabetes mellitus, and antepartum hemorrhage in the present pregnancy.

4. Women who had past history of preterm delivery and pregnancy induced hypertension.

Research Instrument

Self-developed, semi-structured and pre-tested questionnaire were used.

Validity of the tool

A comprehensive literature search and review was done extensively to construct the tool. Validity of the tool was ascertained by consultation with guide, co-guides and other experts from Department of Maternal Health Nursing, Child Health Nursing, Medical Surgical Nursing, Mental Health Nursing, Community Health Nursing and Department of Gynecology and Obstetrics. Research tool was then translated into Nepali and checked by the subject expert.

Pretesting of the research tool

Pretesting was done on 10% (20) participants who were admitted in maternity ward of BPKIHS, Dharan, Nepal. Few modifications were done in the research tool before data collection. Those participants who were included in the pretesting were excluded from the research study.

Data Collection Procedure

Before data collection, permission was obtained from the concerned authority. The study participants were explained about the objectives of the study. Written informed consent was taken from the literate participants and for illiterate participants thumb print was obtained in front of their nearest literate person. Data was collected by using interview technique as well as review of records. Period of data collection was four weeks.

Data Analysis Procedure

Data entered in Microsoft Excel 2010 sheet was analyzed using Statistical Package for Social Sciences (SPSS) version 16. Descriptive statistics like frequency, percentage, mean and standard deviation were used to describe the characteristics of collected data. Pearson Chi-square test and Fisher's exact test was used to find out the association between two categorical variables. The confidence interval was taken as 95% P-value.

Ethical Considerations

Ethical clearance was obtained from Institutional Review Committee (IRC), B.P. Koirala Institute of Health Sciences. Informed written consent was taken from each participant before data collection (IRC Code number: IRC/673/015). Ethical principles were considered and followed throughout the study. Every precaution was taken to protect the rights of the subjects. Respondents participated in the research voluntarily.

RESULTS

Inferential statistics (Pearson Chi-square test and Fisher's exact test) was used to show the association between two categorical variables. P value <0.05 was considered as statistically significant.

Table 2: Socio-demographic characteristics of respondents (n=193)

Char-acter-istics	Category Frequency	Anemic women (n=78)		Non-anemic women (n=115)	
		Per-cent-age	Fre-quency	Per-centage	
Age (in years)	20 - 25	34	43.6%	30	26.1%
	25 - 30	26	33.1%	57	49.6%
	30 - 35	18	23.1%	28	24.3%
		Mean age ±SD 26.11 ±4.07		Mean age ±SD 26.42 ±4.05	
Ethnicity	Dalit	8	10.3%	1	0.9%
	Janajati	30	38.5%	65	56.5%
	Terai	19	24.4%	20	17.4%
	Muslim	2	2.6%	2	1.7%
	Brahmin and Chhetri	19	24.4%	27	23.5%
Religion	Hindu	68	87.2%	102	88.7%
	Buddhist	5	6.4%	5	4.3%
	Muslim	2	2.6%	1	0.9%
	Christian	1	1.3%	1	0.9%
	Kirat	2	2.6%	6	5.2%

Education	Primary Level	14	18%	32	27.9%
	Lower Secondary Level	31	39.7%	31	27%
	Higher Secondary Level and above	33	42.3%	52	45.2%
Occupation	Housewife	75	96.2%	104	90.4%
	Business	1	1.3%	5	4.3%
	Service	2	2.6%	6	5.2%
Type of family	Nuclear	41	52.6%	76	66.1%
	Joint	37	47.4%	39	33.9%
		4	5.1%	7	6.1%
Family income (Nepali Rupees)	Less than 10,000	47	60.3%	56	48.7%
	10,000 - 20,000	25	32.1%	42	36.5%
	20,000 - 30,000	1	1.3%	7	6.1%
	30,000 - 40,000	1	1.3%	3	2.6%
	More than 40,000				

Table 2 depicts that 43.6 % of the anemic women were in the age group 20 to 25 years whereas nearly a half of the non-anemic women (49.6%) were in the age group 25 to 30 years. In the anemic group, more than one third (38.5%) of the respondents were Janajatis whereas in the non-anemic group more than a half (56.5%) of the respondents were Janajatis. Majority of both anemic (87.2%) and non-anemic women (88.7%) were Hindus. Most of the both anemic (42.3%) and non-anemic women (45.2%) have studied up to higher secondary and above. Majority of both anemic (96.2%) and non-anemic women (90.4%) were housewife. More than a half (52.6%) of anemic women and 66.1% of non-anemic women lived in a nuclear family. The 60.3% of anemic women had family income between 10000 and 20000 Nepali Rupees, whereas less than a half (48.7%) of the non-anemic women had family income within 10000 and 20000 Nepali Rupees.

Table 3: Hemoglobin level of respondents (n=193)

Hemoglobin level	Category	Anemic women (n=78)		Non-anemic women (n=115)	
		Frequency	Percent	Frequency	Percent
Hemoglobin (first trimester)	Mild anemia	47	60.25%	0	0%
	Moderate Anemia Severe	25	32.05%		
	Anemia	6	7.6%		
Mean hemoglobin ±SD		9.3 ±1.24		12.77 ±1.29	
Hemoglobin (third trimester)	Mild anemia	39	50%	0	0%
	Moderate Anemia Severe	31	39.74%		
	Anemia	8	10.25%		
Mean hemoglobin ±SD		9.00±1.21		12.87±1.02	

Table 3 states that according to the first trimester record of hemoglobin; most (60.25%) of the anemic women had mild anemia and six percent had severe anemia. Similarly, according to the third trimester record of hemoglobin; exactly a half (50%) had mild anemia and only 10.25% had severe anemia. According to the first trimester record of hemoglobin; the mean hemoglobin level among anemic women was 9.3±1.24 whereas the mean hemoglobin level among non-anemic women was 12.77 ±1.29. Likewise, according to the third trimester record of hemoglobin; 9.00 ±1.21 was the mean hemoglobin among anemic women and 12.87 ±1.02 among non-anemic women.

Table 4: Maternal outcome of respondents (n=193)

Maternal Outcome	Category	Anemic women (n=78)		Non-anemic women (n=115)	
		Frequency	Percentage	Frequency	Percentage
Mode of delivery	Cesarean-Section	44	56.4%	48	41.7%
	Normal Delivery	34	43.6%	67	58.3%
Preterm delivery	Yes	20	25.6%	15	13%
	No	58	74.4%	100	87%
Pregnancy induced hypertension	Yes	4	5.1%	4	3.5%
	No	74	94.9%	111	96.5%
Post-Partum hemorrhage	Yes	3	3.8%	0	0%
	No	75	96.2%	115	100%

Table 4 shows that more than a half (56.4%) of the anemic women whereas only 41.7% of non-anemic women had cesarean section for delivery. Preterm

delivery occurred in nearly a quarter (25.6%) of anemic women and only 13% of non-anemic women. The 5.1% of anemic women had pregnancy induced hypertension on the other hand, pregnancy induced hypertension occurred in only 3.5% of non-anemic women. The 3.8% of anemic women had post-partum hemorrhage whereas none of the non-anemic women had post-partum hemorrhage.

Table 5: Fetal and newborn outcome of respondents (n=193)

Fetal Outcome	Category	Anemic women (n=78)		Non-anemic women (n=115)	
		Frequency	Percentage	Frequency	Percentage
Fetal heart rate	Normal Range (120-160)	69	88.5%	113	98.3%
	Abnormal range (<120 and >160 beats/min)	6	7.7%	1	0.9%
Intra-uterine growth retardation	Absent	3	3.8%	1	0.9%
	Yes	6	7.7%	1	0.9%
	No	72	92.3%	114	99.1%
Intra-uterine death	Yes	3	3.8%	1	0.9%
	No	75	96.2%	114	99.1%
Low birth weight	Yes	26	33.3%	14	12.2%
	No	52	66.7%	101	87.8%
APGAR scores <7 at 1 minute	Yes	10	12.8%	5	4.3%
	No	68	87.2%	110	95.7%
APGAR scores <7 at 5 minutes	Yes	8	10.3%	3	2.6%
	No	70	89.7%	112	97.4%
Need for resuscitation	Yes	9	11.5%	4	3.5%
	No	66	84.6%	110	95.7%
Need for admission in ward/nursery /NICU	Yes	11	14.1%	4	3.5%
	No	64	82.1%	110	95.7%

Table 5 shows that 7.7 % of anemic women's baby had abnormal fetal heart rate whereas only 0.9% of non-anemic women's baby had abnormal heart rate. With regard to IUGR, 7.7% of anemic women's baby and only 0.9% of non-anemic women's baby had intra-uterine growth retardation. Intra-uterine death occurred among 3.8% of anemic women and only 0.9% of non-anemic women.

One third (33.3%) of the anemic women's baby had low

birth weight whereas only 12.2% of non-anemic women had low birth weight. APGAR scores <7 at 1 minute was present in 12.8% of anemic women's babies and only 4.3% of non-anemic women's babies. 10.3% of anemic women's babies had APGAR scores <7 at 5 minutes whereas, only 2.6% of non-anemic women's babies had APGAR scores <7 at 5 minutes. 11.5% of anemic and 3.5% of non-anemic womens' baby required resuscitation. Similarly, 14.1% of anemic women's babies and 3.5% of non-anemic womens' baby required admission in ward, nursery/NICU.

Table 6: Association of anemic status of women with maternal, fetal and newborn outcomes (n=193)

Characteristics	Category	Anemic women (n=78)	Non anemic women (n=115)	Odds ratio	95 % CI	P value
Pregnancy induced hypertension	Yes	4	4	1.5	0.36 - 6.18	#0.57
	No	74	111			
Preterm delivery	Yes	20	15	2.2	1.093 - 4.83	*0.026
	No	58	100			
Mode of delivery	C/S	44	48	0.554	0.310 - 0.990	*0.04
	ND	34	67			
Postpartum hemorrhage	Yes	3	0	-	-	NA
	No	75	115			
Fetal Heart Rate	Normal range (120-160)	69	113			
	Abnormal range (<120 and >160)	6	1	-	-	*0.015
	Absent	3	1			
IUGR	Yes	6	1	0.10	0.012 - 0.892	#0.013
	No	72	114			
IUD	Yes	3	1	4.56	0.46 - 44.66	#0.15
	No	75	114			
Low birth weight	Yes	26	14	3.60	1.73 - 7.49	*0.000
	No	52	101			
Preterm birth	Yes	20	15	2.2	1.093 - 4.835	*0.026
	No	58	100			
APGAR scores <7 at 1 Minute	Yes	10	5	3.23	1.06 - 9.86	*0.031
	No	68	110			
APGAR scores <7 at 5 Minutes	Yes	8	3	4.26	1.095	#0.025
	No	70	112			

Need for Resuscitation	Yes	9	4	3.75	1.11-12.66	#0.024
	No	66	110			
Need for admission in ward/ nursery/ NICU	Yes	11	110	0.21	0.06 - 0.69	#0.005
	No	64	4			

* Pearson chisquare test

 # Fisher's exact test

Table 6 shows that there is no statistically significant association of anemic status of women with pregnancy induced hypertension and intrauterine death. The anemic status of women is significantly associated with preterm delivery (p=0.02), mode of delivery (0.04), fetal heart rate (p=0.01) IUGR (0.01), low birth weight (p<0.001), premature birth (0.02), APGAR scores <7 at 1 minute (0.03), APGAR scores <7 at 5 minutes (0.02) need for resuscitation (p=0.02) and need for admission in ward/nursery/NICU (p=0.005).

DISCUSSION

Anemia is one of the most common health problems among pregnant women. In this study, 22.25% of pregnant women had mild anemia, 14.47% had moderate anemia and 3.77% women were severely anemic. A study done in Eastern Ethiopia found that among 56.8% anemic women, 28.9% were mildly anemic, 26.7% were moderately anemic and 1.2% was severely anemic.[3]

Another study done in Eastern Sudan showed among 62.6% anemic women, 52.4% had mild anemia, 8.1% had moderate anemia and 2.2% had severe anemia.[4] In this study, the mean hemoglobin level among anemic and non-anemic group was 9.15 ±1.22 and 12.82 ±1.15 respectively. The finding of this study among anemic women is greater than the study done by Marahatta[5] with mean hemoglobin level 8.75 gm/dl, but lesser than the study done in Eastern Ethiopia where the mean hemoglobin level was 10.79 (±1.47) g/dl.[3]

With regard to socio-demographic variables, the current study showed that majority of the respondents in anemic and non-anemic group were between 20 to 25 years and 25 to 30 years respectively. The mean age among anemic women was 26.11 ± 4.07 and that of non-anemic women was 26.42 ±4.05. These findings were similar with the study done in Pakistan where the mean age of anemic women and non-anemic women was 26.85 years and 27.08 years respectively.[6] In a study done in Bangalore, India among the severe anemic women showed that the mean age among anemic women was 22.81 ±2.79 and non-anemic women 23.49 ± 2.58.[7]

In the current study, with regard to occupational status, majority of the women in both anemic and non-anemic group were housewife; this finding was similar to the study conducted in a tertiary care hospital in Pakistan.[6]

With regard to maternal outcome of anemia in pregnant women our study shows that the prevalence of preterm delivery among anemic women was 25.6% which is remarkably higher than the study done in Nepal Medical College Teaching Hospital, Kathmandu, Nepal.[5]

In the current study, pregnancy induced hypertension and post-partum hemorrhage were very minimal i.e. 5.1% among anemic and 3.5% among non-anemic women. And only 3.8% anemic and none of the non-anemic women had postpartum hemorrhage. In a study done in Nobel Medical College Teaching Hospital, Biratnagar, Nepal showed that the occurrence of pregnancy induced hypertension among severely anemic women was 36% in anemic, 10% in non-anemic and the postpartum hemorrhage was 14% in anemic and 5% in non-anemic respectively. Our study showed that the operative intervention for delivery occurred among 56.4% of anemic women and 41.7% of non-anemic women which is greater than findings of the study conducted in Biratnagar, Nepal where cesarean section occurred among 22% severely anemic and 5% non-anemic women.[8]

Regarding the IUGR; the current study showed that 7.7% of babies among the anemic women had IUGR and only 0.9% of babies among the non-anemic women had IUGR which is lesser than the study conducted in NMTCH, Kathmandu, Nepal where 16.6% babies had IUGR.[8] In our study, low birth weight occurred among 33.3% of anemic and 12.2% of non-anemic women respectively which is higher than the study done in NMTCH, Biratnagar, Nepal.

With regard to APGAR score at 1 minute and APGAR score at 5 minutes; in the current study low APGAR score at 1min occurred among 12.8% of anemic and 4.3 % of non-anemic women. And the APGAR score at 5 minutes was 10.3% among anemic and 2.6% among non-anemic women. This finding is lesser than the study conducted in NMTCH, Biratnagar, Nepal where the APGAR score at 5 minutes is 18% among severely anemic women and 5% among non-anemic women. In this study, there was no

significant difference in occurrence of IUD among anemic and non-anemic women. This finding is consistent with the study conducted in Pakistan.[6]

CONCLUSION

The study concludes that anemic status of women is associated with maternal outcomes (preterm delivery, and mode of delivery), fetal and newborn outcomes (abnormal fetal heart rate, IUGR, low birth weight, preterm birth, APGAR scores below 7, need for resuscitation and need for admission in ward/nursery/NICU). The prevalence of anemia in pregnancy is more than one-third of the respondents. Anemic status of women is also associated with the socio-demographic variables like ethnicity, family income, intake of non- vegetarian diet per week, number of pregnancies, intake of iron tablets, continuity of iron tablets during pregnancy.

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Risk Factors of Acute Respiratory Infections in Children under Five Years Attending the Fishtail Hospital, Pokhara, Nepal

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ABSTRACT

Introduction: Acute Respiratory Infection (ARI) is one of the leading causes of morbidity and mortality in under five-year children. Risk factors include age, sex, socio-economic status, indoor air pollution, passive smoking, lack of basic health services, and lack of awareness. In this study, we aimed to determine the associated risk factors of ARI in children under five-years of age.

Methods: We carried out a hospital-based descriptive cross-sectional study in the peak period of of November 2017 to February 2018. The study was conducted in Fishtail Hospital and Research Center (FHRC), Pokhara, Nepal. Non probability, purposive sampling technique was used and a structural interview was taken for data collection. The tool comprised of two main parts. Part I- questions related to socio-demographic variables of mother and baby. Part II- questions related to risk factors of ARI. The collected data was analyzed using Statistical Package for Social Science (SPSS) software, version 16. The Chi Square statistic is used for testing relationships between categorical variables.

Results: In total of 302 children visited to FHRC with the symptoms of ARI, only 188 (63%) were diagnosed as ARI. The most common symptoms were fever (42.2%), cough (35.7%), running nose (34.1%), difficulty in breathing (28.5%) and chest in drawing (11.6%). The age of children with ARI ranged from one to sixty month with the mean age of 21.46 ±13.52. Among 188 children, 51% were males whereas 49% were females. There were no statistically differences of children weight at birth among ARI. Our results revealed environmental and social factors associated with ARI.

Conclusions: The risk factors significantly associated with ARI were malnutrition, exposure to wood smoke and mosquito coil and contact with person having ARI. Reducing these conditions may reduce the morbidity and mortality associated with ARI in children.

INTRODUCTION

Acute Respiratory Infection (ARI) is an acute infection of any part of the respiratory tract infection and related structures including paranasal sinuses, middle ear and pleural cavity.[1] ARI is one of the leading causes of morbidity and mortality in under five-year children. It kills more children than any other illness more than AIDS, malaria and measles combined accounting for 19% of all under–five deaths.[2] It is estimated that Bangladesh, India, Indonesia and Nepal together account for 40% of the

global ARI mortality. About 90% of the ARI deaths is due to pneumonia which is usually bacterial in origin.[3] ARI is one of the commonest causes of under-five childhood morbidity and mortality in Nepal. In fiscal year 2071/72 B.S (2014/15 AD) a total of 2,208,221 ARI cases have been reported. The total new cases of ARI were 783/1000 among which 155/1000 deaths were reported.[4] A hospital based survey conducted by Shrestha YB[5] in Kanti Children Hospital, Kathmandu showed that (40.01%) of hospital admissions were due to ARI. Among them pneumonia comprised (58.84%), upper respiratory infections (13.2%) and bronchitis and bronchiolitis (5.96%). Among ARI cases, 85% patients were under five and only 15% were above five years.

Despite the burden of acute respiratory infection on morbidity and mortality in under five year children, there is limited data on risk factors of ARI to evaluate the problem, especially in the region of western part of Nepal. Several risk factors have been associated with ARI which includes age, sex, socio-economic status, indoor air pollution, passive smoking, immune system defects, lack of basic health services, lack of awareness and overuse and misuse of antibiotics.[6,7] However, most of these risk factors are preventable[8], but not been documented in many regions of Nepal. This study therefore aimed to determine the associated risk factors among children under five-years of age with ARI.

METHODS

Study design and setting

This was a hospital-based descriptive cross-sectional analytic study carried out in the peak period of the dry season from November 2017 to February 2018. The study was conducted in Fishtail Hospital and Research Center, Gairapatan-4, Pokhara, Nepal. Pokhara, the capital city of the Gandaki state is situated in the Western region of Nepal. Fishtail Hospital is one of the leading private hospital having 100 beds with multisectoral facilities. Its main catchment area includes Kaski, Syanja, Parbat, Tanahun, Baglung and Lamjung districts. The participants in this study included all the mothers having under five-year children attending Pediatric OPD with their child having symptoms of ARI. Pediatrician diagnosed cases meeting Integrated Management of Childhood Illness (IMCI) criteria were confirmed as cases of ARI.

Sampling

Non probability, purposive sampling technique was used

for this study. Interview were taken to those mothers whose babies are under five years old and were willing to participate in the study. Mothers who were not willing to participate or not providing complete information were excluded in the study.

Research Instrumentation

A structured interview schedule was used for data collection. The instrument was based on objectives as well as review of literature in order to collect information in depth. The consultation with concerned expert from nursing peers, colleagues and with pediatric consultants was done for required information. The tool consisted of two main parts. Part I- questions related to socio-demographic variables of mother and baby. Part II- question related to risk factors of ARI. The content validity of the instrument was established by performing intense study in the related area, seeking the opinion of experts, and peers. Pretesting of the instrument was done in 10% of total population of under five-year age children in Pediatric OPD of FHRC. Revision and necessary modification such as using simple words, sequential arrangements of questions etc. were done on the basis of pretest. The instrument was translated into Nepali version.

Data Collection and analysis

After obtaining the confirmation letter from the concerned authorities of Tribhuvan university, Institute of Medicine (TU, IOM) Pokhara Campus, the proposal was forwarded and got approved from The Ministry of Social Development, Research Department, Gandaki, province. The purpose and objectives of the study were explained to the respondent and verbal consent was obtained.

The data was analyzed on the basis of research objectives. The collected data was checked and organized for accuracy and completeness. Data edited, coded and analyzed on basis of research study using Statistical Package for Social Science (SPSS) software, version 16. Data was analyzed using descriptive statistics (mean, frequency, percentage, standard deviation) and inferential statistics (Chi-square test).

RESULTS

A total of 361 children visited to the FHRC during the study period were selected for the study. Among them

24 children were under one month of age and 27 parents did not give consent whereas eight questionnaires had incomplete information. In total of 302 children visited to FHRC with the symptoms of ARI are participated in the study. The most common symptoms are fever (42.2%), cough (35.7%), running nose (34.1%), difficulty in breathing (28.5%) and chest in drawing were 11.6%. After Pediatrician consultation, among 302 children, only 188 children were diagnosed having ARI. So, the prevalence of ARI under five-year children in FHRC was 62.3% (188/302). Integrated Management of Childhood Illness (IMCI) classifies ARI into mild, moderate and severe pneumonia.[9] Using IMCI guidelines, a total of 48.9% (92/188) were having mild ARI (no pneumonia),34.6% (65/188) moderate and 16.5% (31/188) were severe ARI (Severe pneumonia) (Fig 1).

The age of participated children with ARI ranges from one to sixty month with the mean age of 21.46 ±13.52. Out of the 188 children, 96 (51%) were males whereas 92 (49%) were females. The highest percentage of ARI, 31.4%, was among 1 to 12 months children, followed by 26.6% among 13 to 24 months and the least 9% was among 49 to 60-months children. The children belong to the different ethnicity, with highest percentage was from Brahmin (28.7%) followed by Janajati (27.2%), Chhetri (25.0%), and Dalit (19.1%). Most of the children are by birth Hindu (89.8) and few belong to other religion family, Buddhist (2.1%), Christian (4.5) and Muslim (3.7%). Mother's age, education, occupation, along with types of family and economical status, were presented at Table 1.

The findings of the study revealed maximum number of the mothers belonged to more than 25 years which accounts (54.2%) of total mothers. Majority of (64.9%) mothers were housewife compare to service holder mothers of children (35.1%). Most of the mothers are literate (86.2%). The highest number, 28.7% of the mothers were from Brahmin ethnic group, Janajati (27.2%) and Chettri (25.0%) followed by Dalit (19.1%). Majority (89.8%) of mothers of under five-year children belonged to Hindu religion. The greater number (77.1%) of mothers had adequate economic status. Regarding their living style only 47.9% mothers were from joint family.

Clinical factors associated with ARI were presented at Table 2. Most of the children were normal weight at birth (81.4%) and13.8 % children were of low weight birth and 4.8% were overweight at birth (Data not shown). There were no statistically differences of children weight at birth among ARI and non ARI children group. Similarly,

colostrum given at birth, breast feeding and immunization status has not elucidated any statistically differences among ARI and non ARI children group. However, the nutritional status has influences in ARI.

Our results revealed environmental and social factors associated with ARI. Exposed to wood smoke had high chances to get ARI (p=0.001). Whereas passive smoker had no significantly chances to get ARI. In this study, we did not find statistically significant for the chances of ARI of the factors like mother's education, knowledge on ARI and day care attendance. However, we found factors like mosquito coil use in the house, caregiver's cooking method, history of contact with ARI person, had high chances to ARI (Table 3).
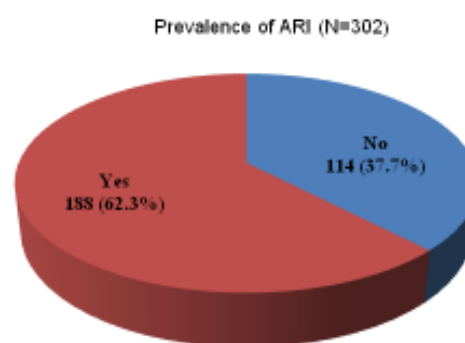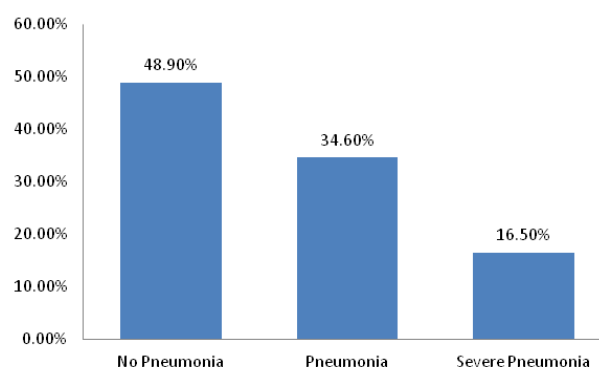

Fig 1A: Prevalence of ARI in FHRC

Fig 1B: Proportion of ARI using IMCI definition in children less than five years

Table 1: Socio-demographic characteristics of respondents

Variables	Frequency (N=188)	Percentage (%)
Gender of children		
Males	96	51.0%
Females	92	49.0%
Children age in months		
1-12 months	59	31.4%
13-24 months	50	26.6%
25-36 months	37	19.7%
37-48 months	25	13.3%
49-60 months	17	9.0%
Mother age		
More than 25	102	54.2%
Less than 25	86	45.7%
Mother education		
Literate	164	86.2%
Illiterate	24	12.8%
Mother occupation		
Housewife	122	64.9%
Service holder	66	35.1%
Economic Status		
Adequate	145	77.1%
Inadequate	43	22.9%
Types of Family		
Nuclear	98	52.1%
Joint	90	47.9%
Ethnicity		
Brahmin	54	28.7%
Chettri	47	25.0%
Janajati	51	27.2%
Dalit	36	19.1%
Religion		
Hindu	169	89.8%
Buddhist	4	2.1%
Christian	8	4.5%
Muslim	7	3.7%

Table 2: Clinical factors associated with ARI

Factors	Total (N=302)	ARI (N=188)	p value
Weight at Birth			
Normal	248	153 (61.7%)	
Low birth weight (<2.5 kg)	43	26 (60.4%)	0.19
Over weight (>4 kg)	11	9 (81.8%)	
Colostrum given at birth			
Yes	268	169 (89.9%)	
No	34	19 (10.1%)	0.26
Breast feeding			
Mixed	221	119 (53.8%)	
Exclusive	82	69 (84.1%)	0.15
Nutritional status			
Normal	286	177 (61.8%)	
Malnourished	16	11 (68.7%)	0.003
Immunization status			
Up to date Vaccination	294	183 (62.2%)	
No/Incomplete vaccination	8	5 (62.5%)	0.29

Table 3: Environmental and social factors associated with ARI

Factors	Total (N=302)	ARI (N=188)	p value
Exposure to wood smoke			
Not exposed	272	165 (60.6%)	
Exposed	30	23 (76.6%)	0.001
Cigarette smoke			
No	285	177 (62.1%)	
Yes	17	11 (64.7%)	0.11
Mosquito Coil use in the house			
Mixed	198	106 (53.5%)	
Exclusive	104	82 (78.8%)	0.02
Caregivers' Cooking Methods			
Gas	272	165 (60.6%)	
Kerosene stove	17	13 (76.45)	
Firewood	13	10 (76.9%)	0.005
Day Care Attendance			
No	258	160 (62.0%)	
Yes	44	28 (63.6%)	0.38
History of contact*			
No	202	101 (50.0%)	
Yes	100	87 (79.8%)	0.001
Mother's level of education			
Literature	262	164 (62.5%)	
Illiterate	40	24 (60%)	0.12
Mother knowledge on ARI			
Adequate	167	102 (61.1%)	
Inadequate	135	86 (63.7%)	0.09

* Contact with someone who has a cough

DISCUSSION

Acute respiratory tract infection (ARI) is regarded as one of the major public health problems and constitutes a major cause of morbidity and mortality among under-five children in the developing countries.[10] The prevalence of ARI in this study was 62.3% which is similar to the report by Sikolia et al[11] in Kenya with the prevalence rate of 69.7%. A community based study conducted in India by Goel et al found the prevalence of ARI to be 52%, lower compared to our study.[12] The prevalence of ARI was high in this study is most likely because of the care givers had poor knowledge of ARI, low socioeconomic status and higher level of exposure to risk factors. Using IMCI guidelines, our data revealed 34.6% moderate ARI (Pneumonia) This is higher than the proportion of pneumonia (17.2%) in the other study.[13] This is because the diagnostic criteria of pneumonia according to Integrated Management of Childhood Illnesses (IMCI) guidelines are highly sensitive.[14] Our study revealed that the highest prevalence of ARI was among those below two years of age. Among above two years age, the prevalence decrease is similar to

a community based study in Australia as there is inverse relationship between the age and prevalence of ARI.[15] The findings of the study revealed maximum number of the mothers belonged to more than 25 years (54.2%) with majority of housewife. Most of the mothers are literate (86.2%) with good economic status. This analysis was done to assess the knowledge of mothers on ARI. The mother's demographic data, economical status and knowledge of ARI may influences the cause of ARI in their children.[3-5] In this study, we identify some related risk factors in children under five year attending FHRC. Nutritional status has shown a risk factor for the cause of ARI. This finding is consistent with a study conducted in Nigeria by Ujunwa et al[6] and in india by Rahman et al[16] where malnutrition was a significant risk factor associated with ARI

Of the environmental and social risk factors identified in our study, exposure to wood smoke, mosquito coil use in the house and history of contact were found to be significant. WHO reported that children exposed to cooking fuels, mosquito coil, increase the risk of developing pneumonia.[13,17] The community has to be educated on the dangers of wood smoke because it is the main source of cooking fuel in the local communities. Contact with someone who had symptoms of respiratory disease significantly increases the risk of a child to develop ARI. ARIs are communicable diseases transmitted by droplets from infected persons. This is an association that has been found in other studies.[13] So, the children should be kept away from people affected with respiratory infection, to prevent them from getting infected. Passive cigarette smoking in this study was not found to be a significant risk factor of ARI, which is in contrast to some other study, where passive smoking is a risk for ARI.[13] This contrast report may be due to the level of exposure to passive smoking. Reducing those risk factors may reduce the cases of ARI in children

Limitations of the study

This study is a hospital-based study and not all of children with ARIs go to the hospital for medical care so the proportion may not be a true reflection of the community. Therefore, a longitudinal study would better illustrate the effects of the potential risk factors.

CONCLUSION

The proportion of acute respiratory infections in the Fishtail Hospital and Research Center (FHRC), Pokhara, Nepal was 62.3%. The risk factors significantly associated with ARI were malnutrition, exposure to wood smoke, mosquito coil use in house and contact with person having ARI. Reducing these conditions will reduce the morbidity and mortality associated with ARI in children.

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Pathway to Care of Psychiatric Services in Gandaki Medical College Teaching Hospital in Western Nepal

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ABSTRACT

Aims and Objectives: The sequence of contacts with individuals and organizations prompted by the distressed person's efforts, and those of his or her significant others, to seek help is known as the pathways to care. The study of the pathways to care provides the relevant information regarding the individual's health seeking and illness behaviour. A wide range of professionals including psychiatrists, psychologists, other doctors, faith-healers and religious healers cater to the needs of mentally ill patients. This study was carried out to identify the pathway to care of patients up to psychiatric care with no prior psychiatric treatment at GMCTH.

Methodology: It is a cross-sectional, descriptive study conducted in GMCTH, Pokhara from Jan 2015 to Dec 2016. After ethical consideration, all new patients and those newly referred to the psychiatric services and agreed to participate were interviewed until the target 100 participants were recruited. ICD-10 was used for diagnosis. Data were computed and analyzed by using Microsoft excel and SPSS. Parametric & non parametric statistical technique was applied wherever appropriate.

Results: Total of 100 patients (56 females, 44 males) was included in the study. Mean age of the entire study cohort was 37.17 years (SD 15.45). The mean no. of months to seek first help from a psychiatrist was 53.03 months (SD: 81.70).

Conclusion: All the patients here eventually made treatment contact with psychiatrists. However, delay was pervasive. Delay in treatment has negative effect in the treatment outcome. The knowledge and recognition of psychological disorders by the traditional healers as well as other treatment providers in the community are crucial for early treatment of psychiatric patients.

BACKGROUND

Mental and substance use disorders account for enormous burdens worldwide. In developing countries, these disorders are already leading causes of disability and their number is expected to increase.[1] Pathways to care refer to the sequence of contacts an ailing person makes with services provided by individuals or organisations, prompted by the effort of the distressed persons and those of his or her significant others, in the process of seeking treatment for the ailment. Sociocultural factors and health service variables such as the organisation, availability, and accessibility of health services exert influence on the pathways patients follow in their route to care.[2] It is by now widely recognised that there is much psychiatric morbidity in primary care medicine. As much as one-quarter to one-third of all general practice patients in some studies suffer from a mental disorder.[3] Furthermore up to a fifth of all persons in a community may be suffering from some psychiatric illness.[4-6] Only a small proportion of these present to the psychiatrist. The rest, mainly those with milder illnesses, either remain untreated or receive some form of treatment in the various primary care and general medical care settings. Various reasons have been given for this - the illness may be unrecognized, the stigma attached to a visit to the psychiatrist, or the forbidding distance to the psychiatric clinics. Alternatively cultural explanations for the illness may prevent the patients from seeking western medical treatment.[7] The aim of the present study was to trace the help-seeking pathway of patients with no prior contact with psychiatric service and to elucidate the role of different services that the patients go through in the process.

MATERIALS AND METHODOLOGY

It is a cross-sectional, descriptive study conducted in Gandaki Medical College Teaching Hospital, Pokhara from Jan 2015 to Dec 2016. It is a tertiary level, referral health institute in Western Nepal. Taking account of ethical issues, a sample size of 100 was estimated to be sufficient for a meaningful analysis. All new patient or patients newly referred to the psychiatric services and agreed to participate were interviewed until the target 100 participants with no prior psychiatric treatment history were recruited. The data collection was based on the convenient sampling method. Subjects were included in the study, after their informed consent. Those subjects who had been old cases at this facility or had attended any other specialty psychiatric health facility were not included. The clinical information and the interview schedule were used for data collection by interviewing either the patient or the informant or both, as appropriate. In case, it was noticed that patient was not able to give the correct history, the informants were interviewed and efforts were made to verify that information. As the cases were worked up in detail; if at any stage of the study it was found that it was not the first contact with any psychiatric health facility, those subjects were not included in the final data analysis. The diagnosis was finally given, after complete history and examination, on the basis of ICD-10 criteria.[8] The study protocol was approved by the institutional review committee of Gandaki Medical College Teaching Hospital in Pokhara. Data were computed and analyzed by using Microsoft excel and statistical package for social sciences version 10 (SPSS 10.0).[9]

The basic characteristics of the subjects were presented as a proportion. For categorical variables, interdependence was tested by the chi square test. In some analysis, the groups were clubbed to meet the criteria for the chi square test. For scale variables, an independent sample t-test was used to determine the significance of the difference between the two means. A P value of <0.05 was considered statistically significant with 95 % Confidence Interval (CI).

RESULTS

A total of 136 subjects were enrolled in this study; however, the final analysis was done for 100 subjects (thirty six were excluded, as they were later on found to have attended another psychiatric health facility). Mean age of the entire study cohort was 37.17 years (SD 15.45). The majority of these patients were in the age group of 21 to 50 years (72%); majority of them were female (62%), from the rural area (86%), medium socioeconomic status (60%) and literate (64%). (Table 1)

Most of those were suffering from anxiety spectrum and mood disorders (77%). Only four (4%) patients consulted a psychiatrist as the first contact, while 38 (38%) of the cases first consulted traditional healers.

The mean time patients took to reach the psychiatrist was found to be more when the first helping agencies were traditional healers (67.7 months) or other doctors (58.3 months), as compared to the other agencies. This difference was also statistically significant. The mean number of months to seek first help from a psychiatrist was 53.03 months (SD: 81.70) and equally worrisome was the mean number of months required to seek first help from a psychiatrist even among patients who were seen by other doctors (58. 3 months) while paramedics were better as referral source (25.1 months). (Table 2, 4, 5)

Table 1 Socio-demographic/economic characteristics

Item	Category	Frequency	Percentage
Sex	Male	38	38
	Female	62	62
Age in Years	<20	12	12
	21-30	24	24
	31-40	27	27
	41-50	21	21
	51-60	10	10
	>61	6	6
Education	Illiterate	36	36
	Literate	64	64
	Primary (I-IV Std)	21	21
	Lower Secondary (V-VIII)	19	19
	Secondary (IX-X)	9	9
	SLC/SEE	3	3
	Graduate (≥X+2)	12	12
Marital status	Unmarried	18	18
	Married	79	79
	Separated/Divorced	3	3
Occupation	Unemployed	5	5
	Partially Employeda	84	84
	Employed	11	11
Socioeconomic Statusb	High	6	6
	Medium	60	60
	Low	34	34
Domicile Settings	Rural	86	86
	Urban	14	14

Note:

a. Operational definition of partially employed: Partially Employed are those who work but not as fixed job or salaried workers.

b. Operational definition Low, Middle and High Socioeconomic status: Those whose monthly earnings are < 10,000, 10-20000 and > 20000/- equivalent Nepalese Rupees.

Table 2 :Distribution of ICD-10 Diagnosis and first pathway of care

Item	Category	Frequency	Percentage
ICD 10	F20-29	2	2
	F30-39	23	23
	F40-48	54	54
	F60-69	2	2
	G 43	17	17
	Deferred	2	2
	Total	100	100
First Contact	Traditional Healers	38	38
	Paramedics	18	18
	Other Doctors	37	37
	Hospital ER	3	3
	Psychiatrists	4	4
	Total	100	100
First Contact Suggested By	Self/Family	92	92
	Friends/Others	8	8
	Total	100	100

Pertaining to the use of psychotropic medications, 50% of the subjects were given psychotropic medications by other practitioners. Regarding benzodiazepine use alone or in combination, the Fisher's exact test, the two-tailed P value equals 0.0071. The association between Benzodiazepine uses versus non use is considered to be statistically significant (P value=0.0071). (Table 3)

Table 3: Allopathic Treatment provided

Category	Freq	Percent	P-value
Benzodiazepine only	13	13	
Benzodiazepine/Antidepressants	5	5	
Benzodiazepine/Antidepressants/ Antipsychotics	3	3	
Benzodiazepine/Antidepressants/ Others	9	9	
Benzodiazepine/Others	10	10	
Antidepressants only	6	6	0.0071
Antidepressants/Antipsychotics/ Mood Stabilizers	1	1	
Antidepressants/Others	1	1	
Antipsychotics only	2	2	
Others only	29	29	
No data	21	21	
	100	100	

Table 4: Time to First Contact (in months)

First Contact	No	Mean	Std. Dev
Traditional Healers	38	18.4	42.1
Paramedics	18	10.9	14.6
Other Doctors	37	17.4	41.1
Hospital ER	3	8.7	13.3

Psychiatrists	4	4.5	4.0

Table 5: Time between First Contact to Psychiatrist (in months)

First Contact	No	Mean	Std. Dev
Traditional Healers	38	67.7	107.4
Paramedics	18	25.1	28.6
Other Doctors	37	58.3	70.9
Hospital ER	3	34.7	53.1

DISCUSSION

The possible reasons for most of the subjects in this study being 21 to 50 years may be because this is the economically productive age group; therefore, these patients have been brought for the right care. Nevertheless, the presentation of anxiety and mood disorders more in the relatively younger age group (<40 years) has also been reported by authors in the past.[10-12]

The distribution in this study is skewed toward females (62%), which might be attributed to the prevailing society belief where male member is considered to be stronger than that of a female. Moreover, most of the male members of the country are working abroad. The findings in the present study also support the fact that psychiatric hospital services are utilized more by female patients than by male patients. Other studies have made similar observations.[13, 14]

The majority of patients in our study belonged to the middle socio-economic status, with low level of literacy, and was with a rural background. It has been noted that patients belonging to families from the urban, literate, and higher socio-economic status, preferred to take treatment from private practitioners or from distant centers. This could be due to the perceived stigma associated with mental illnesses and with that of psychiatric departments. Predominance of anxiety and mood disorders among these patients may indicate that patients with severe mental illnesses seek treatment from a specialty psychiatric hospital, as there is a common myth that psychiatric hospitals are for mentally ill persons, (patients having psychotic disorders) rather than for patients with any other psychiatric illness. Similar findings have been reported by other authors in India.[15] In the present study, for psychiatric illness, most cases contacted traditional healers as the primary helping agency. However, subsequently, after not getting any relief, they sought

the help of other agencies, such as, paramedics, other doctors, hospital ER, and so on. The psychiatrist was taken as a last resort when all other treatments had failed. In a study in India due to the paucity of facilities, 80% of the populations have to depend on available treatments consisting of Ayurvedic and Unani systems of medicine, religious treatments consisting of prayers, fasting, and so on, as also various witchcrafts and magical rituals.[16] The situation is more or less the same in Nepal, and not surprisingly 38% of the cases in our study contacted traditional healers as the primary helping agency. Another study has noted that a substantial number of patients suffering from severe mental disorders seek other doctors care.[17] Although, the ancient wisdom may have some role in the treatment of mental disorders,[18] there is a need for generating awareness in the psychiatric patients in Nepal to get professional help. The traditional healers, while dealing with psychiatric patients, often hide their inability to understand and treat these disorders and attribute them to supernatural causes, further enhancing the disbeliefs of these patients. A study on the indigenous healers observed that psychiatric patients used to go through different traditional and faith healers, including indigenous methods of exorcism, before arriving to proper care.[19] This caused a delay in presentation, which was largely attributable to the stigma associated with such llnesses,[20] which in turn, led to suffering, and affected the outcome.

In our study, the delay in initiation of proper psychiatric treatment was noted. It was the long path that most of the patients took to reach psychiatrists, and there was a significant delay of up to 396 months, with a mean delay of 53.03 months (4.4 years).

Although it is an established fact that in a majority of psychiatric illnesses, (including schizophrenia, affective disorders) early diagnosis and treatment can significantly improve the outcome and prognosis, Gater et al[21] have noted that there is a longer delay on pathways involving native healers; while Gureje et al[22,23] and Banerjee and Banerjee4 from India, have found that the patients who first consulted traditional healers, tended to arrive at a tertiary psychiatric service much later than those who consulted other caregivers. The results of our study corroborate these findings.

Another important point noted in our study was that the previous patients and their relatives (included in category 'others') were the major referring agency for patients to go

for psychiatric care followed by allopathic practitioners. These findings may be because of circumstance. In tertiary hospitals other practitioners are major referral source especially with mild to moderate psychiatric problems like anxiety spectrum disorders and mild to moderate mood disorders, as in this study.

Like a study in 1998 which observed that 25% of the patients took their own initiative to seek help and more than 55.2% were referred by the spouse or relatives; our study findings was 92% referrals by self and families.[25] While another study observed that the medical sector was the most common source of referral.10 In our study, as 57 % first contacts were paramedics and other doctors, they are the likely source for early contact with psychiatric facilities. Major concern is the mean time taken.

Regarding use of psychotropic medications, 50% of the subjects were given psychotropic medications by other practitioners. Prescription of benzodiazepine was statistically high with P-value 0.0071. In a hospital based study in Gandaki Medical College, there was a huge variation regarding the duration of benzodiazepines use, ranging from the period of less than of one month to the maximum duration of 192 months or 16 years.[25] The frequency of benzodiazepine prescription in this study is startling.

The limitation of this study was that it was conducted at a medical college only; study findings may not be reliable and generalization to other centres cannot be made. So, a study from government hospitals, where more representative population attends the OPDs or a multicentre study could have given different results. Secondly, prefixed days are usually attended by the same specialist always; therefore, attendance to such prefixed days may also depend upon the perceived expertise and professional reputation of the expert, among the general population. Third, the patient groups used in this study were heterogenous and the pathway to care may have affected them. As severe mental disorders, which were less represented in this study, are the ones who are likely to reach mental health services as first contact.

CONCLUSION

The study found that the majority of patients attending the teaching hospital, psychiatric department suffered from anxiety and mood disorders and belonged to the female gender, rural locality, lower socioeconomic class,

and was with a low educational status. Traditional healers were the most commonly sought primary helping agency among the study subjects. Pathways involving traditional healers, paramedics and other doctors took a longer time to reach the right psychiatric help. The need for incorporating an efficient and effective referral mechanism, the role of various service providers in the pathway of care, and availability of services should be kept in mind when preparing any mental health program in Nepal.

ANNEXURE

Definitions

1. The Psychiatrist in this study was the person who had completed three years of post-graduation studies in Psychiatry from an institute recognized by the Nepal Medical Council.

2. Paramedic was anybody with degrees or certificates recognized by Nepal Health Professional Council.

3. Other doctors were anybody who had at least completed graduation in Medicine and received the degree of MBBS from any medical college recognized by the Nepal Medical Council. However, this person would not have specialized in Psychiatric Medicine.

4. Traditional healers were the people who practiced "dhami", "jhakri", witchcraft, and treated patients by using magico-religious practices. They did not have any medical qualification.

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Pattern of ocular morbidity in pediatrics age group in a tertiary centre in western Nepal

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Keywords

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ABSTRACT

Introduction: Ocular morbidities are importantbecause of their impact on child's development,education and future work. Ocular morbidities in children may not be diagnosed and treated in time due to inability to express their problems which leads to amblyopia by the time they can express it. This study was conducted with an objective to determine the pattern of ocular morbidity in children less than and equal to 14 years of age presenting in the Outpatient Department (OPD) of Gandaki Medical College, Pokhara.

Materials/ Methods: This is a cross sectional observational study where we reviewed the profile of all of all patients of age group equal to or less than 14 years entering eye OPD from September 2016 to September 2018 for eye examination.

Result: A total of 1471 patients presented to eye department of GMC. The mean age of the patient was 8.25 ±4.24 years among which 57.8% were males and 42.2% were females. Maximum number of the patients were in age group 11 to 14 years (38.1%) while minimum number of the patients were in the age group <1 year(10.6%).Conjunctival disorders (23.9%) was the most common ocular morbidity followed by refractive error in (18.2%), miscellaneous conditions (10.4%), eyelid diseases (8.6%), lacrimal system diseases (7.8%).

Conclusion: Thestudy gives a picture and pattern of ocular diseases in pediatrics age group which not only helps in early diagnosis and treatment of ocular diseases but also in decreasing the magnitude of childhood blindness and amblyopia.

INTRODUCTION

Ocular morbidities are importantbecause of their impact on child's development,education, future work. Childhood ocular morbidities and if undetected, may result in severe ocular disabilities or even blindness.Childhood blindness is one of the major causes of preventable blindness. According to WHO, there are estimated 1.4 million childhood blindness worldwide of which two third live in the developing 6 countries like Nepal.1

The major causes of childhood blindness in developing countries like Nepal are vitamin A deficiency, measles, trachoma, refractive errors, amblyopia. Childhood blindness is one of the component of WHO's vision 2020 programme to control blindness. After eradication of trachoma recently from Nepal in 2018 (WHO), challenges to control childhood blindness and amblyopia is still present.

Ocular morbidities in children may not be diagnosed and treated in time due to inability to express their problems which leads to amblyopia by the time they can express it. Data onocular morbidity in children isessential for

planning and evaluation of preventive andcurative services for children. Few hospital based studies are available on childhood ocular morbidities in Western Nepal.2

Information obtained from our study might be useful in improving the existing primaryeye care facilities consequently reducing the prevalence of childhood blindness and severe visual impairment.

Gandaki Medical College (GMC) is a tertiary centre in Western Nepal. A number of pediatrics patients come to the eye department of this college. So we performed the study to determine the pattern of ocular morbidities in children less than and equal to 14 years age presenting in the Outpatient Department of GMC. This type of study helps not only in early diagnosis and treatment of ocular diseases but also in decreasing the magnitude of childhood blindness and amblyopia.

METHODS

This is a cross sectional observational study where we reviewed the profile of all the patients of the age group equal to or less than 14 years entering eye OPD from September 2016 to September 2018 for eye examination. Data on age at presentation, sex and diagnosis were collected from OPD records. Patients were grouped into four groups (<1 year, 1-5 years, 6-10 years and 11-14 years).

Data on age at presentation, sex and diagnosis were collected from OPD records. Patients were grouped into four age groups (<1 years, 1 to 5 years, 6 to 10 years and 11 to 14 years).

In all the patients, visual acuity was taken and refraction performed routinely. Orthoptics evaluation and cycloplegic refraction were performed when needed.Anterior segment examination was done with torch and slit lamp. Posterior segment examination was performed after dilating the pupil using direct and indirect ophthalmoscope. The data were recorded and analyzed using SPSS statistics programme version 11.6.

RESULT

A total of 1471 patients presented to eye department of GMC. The mean age of the patient was 8.25±4.24 years among which 57.8% were male and 42.2% were female.

Maximum number of the patients were in age group 11 to 14 years (38.1%) while minimum number of the patients were in age group < 1 year. (10.6%). Details of the age and sex distribution is shown in figure 1.
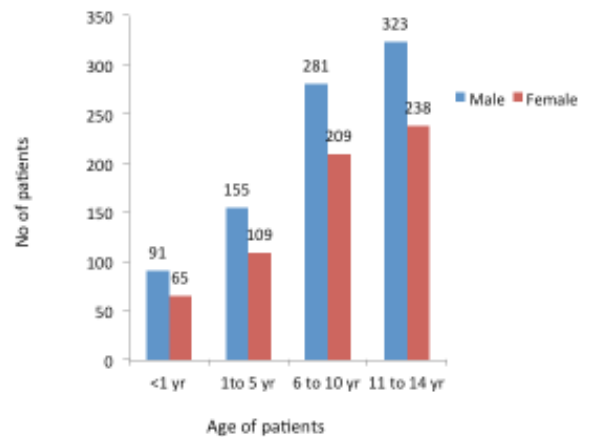

Figure 1: Distribution of patients in different age group

Regarding presenting complaints, blurring of vision was the most common seen in 20.3%, followed by itching (13.3%), redness (11.6%). Details of common symptoms are shown in figure 2.
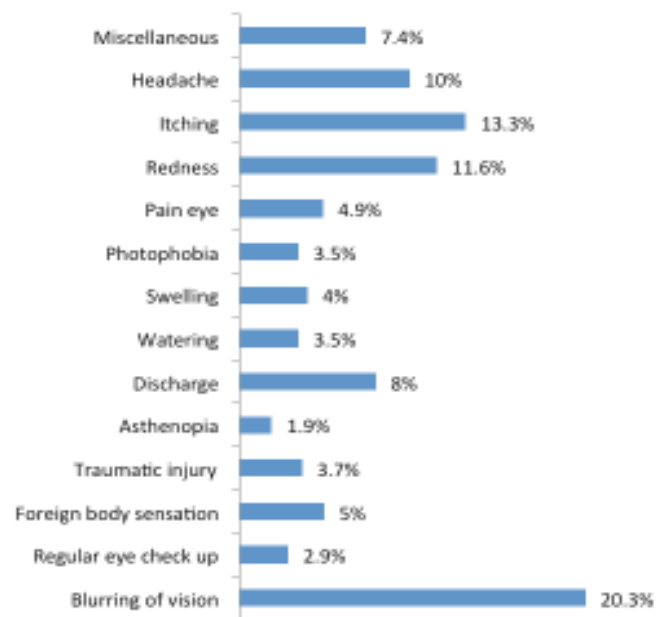

Figure 2: Chief complaints of patients

Miscellaneous symptoms include deviation of eyeball, drooping of eyelids, double vision, and forward protrusion of eyeball. In our study, majority of the patients had conjunctival disorders (23.9%) followed by refractive error (18.2%), normal (12%), miscellaneous conditions (10.4%), eyelid diseases (8.6%), lacrimal system diseases (7.8%). Details of ocular morbidities are shown in Table 1.

Table 1: Distribution of ocular morbidity

Morbidities	Age group				Total
	<1yr	1-5 yr	6-10 yr	11-14	
Refractive error	0	10 (0.7%)	106 (7.2%)	151 (10.3%)	267 (18.2%)
Orbit	2(0.1%)	5 (0.3%)	8 (0.5%)	10 (0.7%)	25 (1.7%)
Squint	3 (0.2%)	7 (0.5%)	10 (0.7%)	16 (1%)	36 (2.4%)
Amblyopia	0	0	8 (0.6%)	21 (1.4%)	29 (2%)
Lid	1 (0.1%)	30 (2%)	54 (3.6%)	42 (2.9%)	127 (8.6%)
Lacrimal drainage system	73 (5%)	33 (2.2%)	8 (0.5%)	1 (0.1%)	115 (7.8%)
Conjunctiva	51 (3.5%)	84 (5.7%)	87 (5.9%)	130 (8.8%)	352 (23.9%)
Cornea and sclera	0	21 (1.5%)	24 (1.6%)	19 (1.3%)	64 (4.4%)
Lens	0	8 (0.5%)	9 (0.6%)	4 (0.3%)	21 (1.4%)
Uvea	0	1 (0.1%)	11 (0.7%)	14 (1%)	26 (1.8%)
Vitreous and retina	0	1 (0.1%)	6 (0.4%)	7 (0.5%)	14 (1%)
Optic nerve/ neurophthalmlolgy	0	1 (0.1%)	13 (0.9%)	5 (0.3%)	19 (1.3%)
Ocular trauma	3 (0.2%)	15 (1%)	22 (1.5%)	6 (0.4%0	46 (3.1%)
Normal	17 (1.2%)	34 (2.3%)	61 (4.1%)	65 (4.4%)	177 (12%)
Miscellaneous**	5 (0.3%)	15 (1%)	64 (4.4%)	69 (4.7%)	153 (10.4%)
Total	155 (10.6%)	265 (18%)	490(33.3%)	560 (38.1%)	1471 (100%)

* Miscellaneous: staphyloma, glaucoma, optic atrophy, coloboma, microcornia, retinoblastoma.

Among the conjunctival disorders, 91.5% patients had conjunctivitis of which infective conjunctivitis was seen in 46.6% and allergic conjunctivitis was seen in 44.9% which is shown in table 2. Other conjunctival diseases include subconjunctival haemorrhage,conjunctival melanosis, cysts, papillomas. Conjunctivitis was more common in age group 11 to 14 years (8.8%).

Refractive error was more common in age group 11 to 14 years (10.3%) followed by six to 10 years (7.2%) and one to five years (0.7%). In age group < 1 year, lacrimal system disease (5%) was the most common disease followed by conjunctival disease (3.5%). Congenital nasolacrimal duct obstruction with dacryocystitis was the most common lacrimal system disease. In age group one to five years, conjunctival disease was the most common disease (5.7%) followed by normal patients (2.3%), lacrimal system disease(2.2%). In age group six to 10 years, refractive

error (7.2%) was the most common ocular morbidity followed by miscellaneous conditions (4.4%), eyelid diseases (3.6%). In age group 11 to 14 years, refractive error (10.3%) was the common morbidity followed by conjunctival disorders (8.8%).

Amblyopia was seen in 2% of patients. Though less, diseases of lens (1.4%), uvea (1.8%), retina (1.8%), and opticnerve (1.3%) were also seen.3.1% of the patients had ocular injuries and squint in 2.4% patients.

Table 2: Types of conjunctivitis

Types of conjunctivitis	No. of patients	%
Infective	164	46.6
Allergic	158	44.9
Others	30	8.5
Total	352	100

DISCUSSION

In our study 57.8% were male and 42.2% were female. Similar results showing male preponderance was seen in studies byRai Salma KC et al,[2] Sahoo JR et al,[3] Sethi S et al, [4] Ava H et al.[5] This may be due to gender bias in health care seeking behavior in our community.

In our study, maximum number of the patients was in age group 11 to 14 years (38.1%). Similar findings were seen in other studies by Rai Salma KC,[2] Sahoo et al[3], Gupta et al6. But other studies showed more patients in age group two to five years.[5,7] More patients in older age group may be due to better communication skills and early expressions of their problems with the parents.

Blurred vision was the most common symptom followed by itching in our study which was comparable to study by Sahoo et al[3] in India. But studies by Salma et al[2]shown watering was the most common symptom followed by blurring of vision. Blurring of vision was the most common symptom can be explained by the fact that it is more alarming for child and his family leading to prompt health seeking behavior.

In our study, majority of the patients had conjunctival disorders (23.9%) followed by refractive error in (18.2%), normal (12%) miscellaneous conditions (10.4%). A number of patients coming to eye OPD for examination were referral patients from pediatrics department resulting in a large number of normal patients in our

study. Similar results showing more conjunctival diseases was seen in other studies by Salmaet al[2] in Nepal, Gupta et al[6] in India and Sadia Sethi et al[8] in Pakistan. Whereas other studies showed more refractive errors.[3,9] Less refractive errors compared to other studies can be due to the fact that a large number of the patients were referral patients from Pediatrics Department. Also majority of our patients were from urban areas going to school. Refractive errors are early diagnosed among school going children.

Among the conjunctival disorders, 91.5% patients had conjunctivitis of which infective conjunctivitis was seen in 46.6% and allergic conjunctivitis was seen in 44.9%. But other studies showed more allergic conjunctivitis than infective.[2,3,9] In our study, refractive error was most common in age group 11 to 14 years followed by six to 10 years which was similar to other studies.[2,3]

Eyelid disorders comprising mostly of chalazion, hordeolum, blepharitis was seen in 8.6% of the patients but in other studies there was slight variation in result.[2,6,9] Poor eye hygiene of the children is responsible for eyelid disorders. Ocular trauma was seen in 3.8% of the patients. Foreign bodies, subconjunctival hemorrhage, eyelid lacerations were the main causes of the ocular trauma. But other studies showed higher numbers of ocular trauma cases.[3,6] The frequency of ocular trauma in children is also high worldwide due to unsupervised play and use of dangerous objects by children.

Lacrimal system disease was seen in 7.8% of the patients. Congenital dacryocystitis due to nasolacrimal duct obstruction was responsible for lacrimal system diseases in children. Other studies showed slightly higher rate of dacryocystitis.[2,6,9] Our studies showed a large number of normal patients too (12%). This can be explained by the fact that our hospital is a tertiary centre where a number of patients coming to eye department were referred patients from pediatrics department.

CONCLUSION

Our study showed that conjunctival disorders was the most common ocular morbidity followed by refractive error, eyelid diseases, lacrimal system diseases.

The study gives a picture and pattern of ocular diseases in pediatrics age group which not only helps in early diagnosis and treatment of ocular diseases but also helps in decreasing the magnitude of childhood blindness and amblyopia by providing health education and counseling

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The role of eye camps in rural areas of Nepal

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ABSTRACT

Objective: To evaluate the role of eye camp in reducing avoidable blindness in Nepal.

Methods: A cross sectional camp-based study was conducted in a remote village of Eastern Nepal, where a six days eye screening and free surgical camp was done.

Results: A total of 467 people were screened, where 280 (60%) were males and 187 (40%) females. Mean age of the patient was 47.6 years. Age related cataract 165 (17.7%) was the commonest cause of decreased vision followed by refractive error 105 (11.2%). Among 165 cataract patients, 81 (49.1%) underwent cataract surgery. The mean age of the operated patient was 74.9 years. Among the operated eyes, visual impairment was present in 56 (69.1%) eyes and blindness in 25 (30.9%). After cataract surgery, visual acuity was restored to 6/6-6/18 in 58 (71.6%), 6/24-6/60 in 18 (22.2%) and five (6.2%) had visual acuity of <6/60. The causes of poor visual acuity in these patients were corneal edema (three cases), anterior uveitis (1 case) and optic atrophy (1 case). Pterygium excision (seven cases), entropion correction (two cases), chalazion I&C (one case) were other surgery performed in the camp. Refractive error was corrected by prescribing glasses.

Conclusion: Cataract was found to be the major cause of blindness followed by refractive error. Conducting eye screening and surgical camps helps in restoring vision to the residents of remote areas, thus reducing the burden of blindness due to cataract and refractive error.

INTRODUCTION

Eye camps are an important way of delivering quality eye health care. The surgery in eye camps is marginally economical and more accessible. The people in Nepal are still deprived of proper eye health care due to the challenging geography of the nation, illiteracy and poor socio-economic status. Conducting surgical eye camps provide effective and accessible eye care which helps in reducing the burden of eye disease.

Globally, 285 million people are visually impaired, out of which 39 million are blind. The major causes of visual impairment are uncorrected refractive errors (43%) followed by cataract (33%) and about 90% of the world's visually impaired live in developing countries.[1,2] Nepal National Blindness Survey in 1981 showed the prevalence of blindness has declined from 0.84% in 1981 to 0.39% in 2010.[3,4] The major cause of blindness was cataract (72%) in 1981 which has declined to 65% of blindness in 2010.[3,4] The burden of reversible blindness due to cataract for the underprivileged people remains a great concern for the country. Therefore, conducting surgical eye camps in the remote and mountainous areas will help in the prevention and control of blindness in Nepal.

The present study was done to assess the role of eye camp in reducing the avoidable blindness in Nepal. This was a six days surgical eye camp in the remote village of Tehrathum district of Eastern Nepal which was conducted by Biratnagar Eye Hospital. This hospital organizes such camps every year covering Eastern region of Nepal.

MATERIALS AND METHODS

This was a cross sectional camp-based study done for six days in an Eastern region of Nepal where free eye screening and surgery was provided. The team included one ophthalmologist, two ophthalmic assistants, one ophthalmic technician, nurses and paramedics.

Eye screening was conducted in an eye care center present in Tehrathum district and those patients with ocular problems were analyzed. Refraction was performed in all the patients with decreased visual acuity and glasses were prescribed as needed. Treatment of minor ocular conditions was done at the examination site. Those who required cataract surgery were further evaluated. Informed written consent was taken from the patients. The health post building was sterilized a day before the surgery. Manual small incision cataract surgery was performed with fish hook technique. Under aseptic precautions, the eye to be operated was draped after peribulbar anesthesia. Conjunctival peritomy was done. Frown shaped partial thickness scleral tunnel was made followed by AC entry 1 to 2 mm into the clear cornea with keratome knife. Viscoelastic substance was injected into the anterior chamber and capsulotomy was done with cystitome. Nucleus delivery was done with fish hook technique. After irrigation and aspiration of the cortical matter, PMMA IOL was inserted into the capsular bag. Viscoelastic was removed from anterior chamber with a simcoe and intracameral cefuroxime (0.1 mL of 10.0 mg/mL) was injected after formation of anterior chamber. Sub conjunctival injection of dexamethasone (2 mg) and gentamicin (20 mg) was given at the end of the procedure.

The patients were discharged on topical medication comprising of combination of ofloxacin and dexamethasone six times daily and tapered over six weeks. A follow-up was conducted at the same eye care center four to six weeks after surgery. Data obtained were entered in Microsoft Excel 2010 and analysed using SPSS 22.0 version.

RESULTS

A total of 467 people were examined during the eye screening program. The mean age was 47.6 years. The age range of the patients is shown in Table 1.There was a female preponderance (60%) compared to male (40%) with female to male ratio of 1.5:1. (Figure 1)

Age Group	No of patients n(%)
0-20	72(15.4)
21-40	95(20.3)
41-60	159(34)
>60	141(30.2)
Total	467

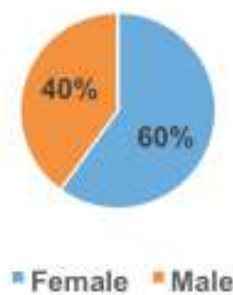Table 1. Age group of the patients

Figure 1. Gender distribution of the patients

They presented with different ocular problems which are listed in Figure 2. Age related cataract (17.7%) was the commonest cause of decreased vision followed by refractive error (11.2%).
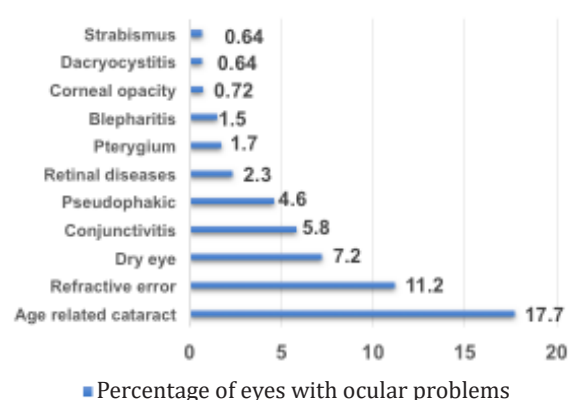

Figure 2. Common eye diseases among camp patients

Out of 165 eyes with cataract, 80 underwent small incision cataract surgery with PCIOL implantation and one patient had intracapsular cataract extraction with ACIOL implantation. The mean age of the operated patient was 74.9 years. Among the operated patients, 53% were

females and 47% were males. Bilateral cataract surgery was performed in two patients. The presenting visual acuity was recorded using the WHO categories of visual impairment (Figure 3). Visual impairment was present in 56 (69.1%) eyes and blindness in 25 (30.9%).

At the time of discharge, 76 of 81 operated eyes (94%) had visual acuity of 6/60 or better and 5 (6%) had less than 6/60 (Figure 3). Cause of low vision in these cases was corneal edema (3 cases), anterior uveitis (1 case) and optic atrophy(1 case). There were two cases of posterior capsular rent, 1 requiring ACIOL and IOL was placed in the sulcus in other case.
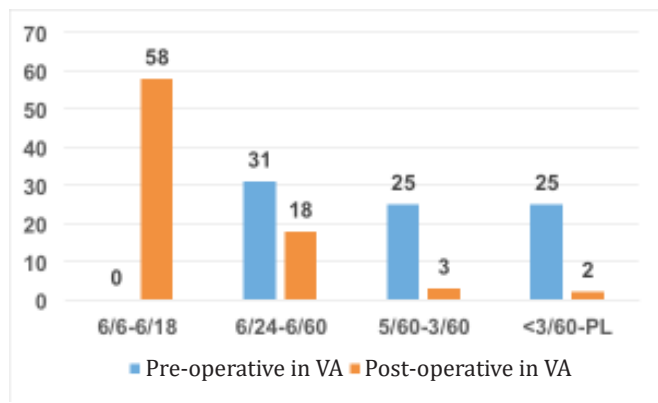
Figure 3. Pre and Post-operative visual acuity (n)

Pterygium excision (7 cases), entropion correction (2 cases), chalazion I & C (1 case) were other surgery performed in the camp. (Figure 4)
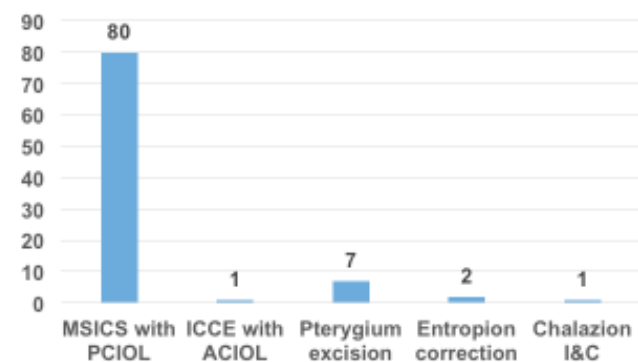

Figure 4. Types of surgery performed

DISCUSSION

Cataract is the leading cause of blindness in Nepal. The prevalence of blindness is high in remote areas due to different barriers like lack of facility, geographical distribution, unaware of treatment and low economic status.[4] Therefore, surgical eye camps have an important

role to decrease the burden of cataract related blindness.

In our study, there was increased number of females (53%) than males (43%) which is comparable to the study by Sitoula et al[5] and Pradhan et al.[6] This could be due to the fact that they are deprived of health care facility and are dependent both economically as well as physically on their family members. Hence they become the target group to benefit the most from such camps. Moreover, the prevalence of blindness is more in females than males.[4] The average age of the patient was 74.9 years which was similar to the study by Sitoula et al.[7]

Small incision cataract surgery with PCIOL implantation was the choice of surgery in our study. Previously, ICCE was the standard surgical technique which had more complications and patient needed an aphakic glasses. However, there is increasing trend in SICS because it is cheaper, has easy learning curve with fewer complication and is suitable for high volume cataract surgery especially in developing nation.[8]

In patients undergoing cataract surgery, visual impairment was present in 56 (69.1%) eyes and blindness in 25 (30.9%). At the time of discharge, 76 (93.8%) attained VA 6/60 or better and 2 were blind (<3/60). In other study by Sitaula et al,[7] 40 eyes were blind and visual impairment in 20 eyes which improved to 6/60 or better in 54 (90%) eyes after surgery which is comparable to our study. Complications like posterior capsular rent, corneal edema, anterior uveitis and pre-existing optic atrophy were noted. Such complications were also noted in other study.[5,7]

In our analysis, refractive error was found in 11.2% cases. The study by Nepal et al[9] and Shrestha et al[10] reported the prevalence of refractive error among school children to be 8.1 and 11.9% respectively.

CONCLUSION

Cataract seems to be a major cause of blindness in Nepal. There should be expansion of infrastructure, human resources with financial sustainability to provide eye care facility in remote rural areas. Similar eye camps should be conducted regularly to provide service to the underprivileged people. Surgical eye camps covering people of remote areas have an important role to combat the burden of this preventable cause of blindness.

ACKNOWLEDGEMENT

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Is Suicide a Solution?

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Suicide is the act of intentionally causing one's own death. Suicide often stems from a deep feeling of hopelessness. The inability to see solutions to problems or to cope with challenging life circumstances may lead people to see suicide as the only option to what is really a temporary situation. Suicides are impulsive acts which occur due to stress, such as financial problems, unemployment, homelessness, poverty, mental illness, substance misuses, childhood trauma, social isolation, loss of loved ones.

According to the recent studies, numbers of male attempt suicide is approximate four times higher compared to female. According to world health organization (WHO), every year close to eight lakh people take their own life which is one person every 40 second. There are many more people who attempt suicide. Every suicide is a tragedy that affects families, communities and entire country and has long-lasting effects on the people left behind. Suicide occurs throughout the lifespan and was the second leading cause of death among 15 to 29-year-olds globally in 2016. Suicide is generally most common among those over the age of 70 years because of lack of feeling of togetherness. Ninety percent of people who commit suicide are due to mental illness, which can be completely prevented. China has one of the highest female suicide rates in the world and is only the country where it is higher than men. A suicide rate in the Nepal has ranked at 126th by 2015. WHO report says that 6840 suicides are committed annually in Nepal. Statistics shows that the countries with the highest suicide rates in the world are incredibly diverse. It is said that female are more likely to have thoughts of suicide. Male are more likely to use firearms to commit suicide and females use poisoning method to commit suicide.

Among these all data just as a writer, I want to ask you all "is suicide a solution for those people who think to live a life in pathetic environment? It is said in religious aspects that god has given us life to live as both happiness and sorrows are the two sides of the same coin. Life is not a fruitful cake walk many obstacles' comes and goes so

try to handle it by sharing. Suicide can be prevented. If you are consulted by someone who are thinking about suicide, listen to them, recommend for psychological counselling. There is a need to increase education and awareness among medical professionals for proper counseling to the patients.

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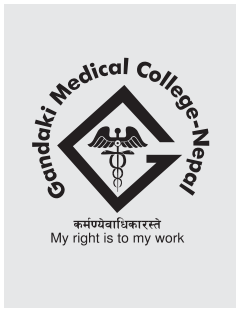
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Authorship should be limited to those who have made a significant contribution to the conception, design, execution, or interpretation of the research work. All those who have made significant contributions should be listed as co-authors. Where there are others who have participated in certain substantive aspects of the research project, they should be acknowledged or listed as contributors. The corresponding author should ensure that all appropriate co-authors and no inappropriate co-authors are included in the paper, and that all co-authors have seen and approved the final version of the paper and have agreed to its submission for publication.

Authors are expected to consider carefully the list and order of authors before submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of authors is not possible after the manuscript has been accepted for publication.

All authors should disclose in their manuscript any financial or other substantive conflict of interest that might be construed to influence the results or interpretation of their manuscript.

When an author discovers a significant error or inaccuracy in his/her own published work, it is the author's obligation to promptly notify the Editor-in-Chief and cooperate to retract or correct the paper. If the Editor-in-Chief learns from a third party that a published work contains a significant error, it is the obligation of the author to promptly retract or correct the paper or provide evidence to the Editor-in-Chief of the correctness of the original paper.

Reviewer Guidelines

The Journal of Gandaki Medical College-Nepal (J-GMC-N) is a peer reviewed journal. Peer review is a collaborative process that allows manuscripts submitted to a journal to be evaluated and commented upon by independent experts within the same field of research. Upon receipt, manuscripts are assessed for their suitability for publication by the Editorial Committee. Only the manuscripts that meet the journal format and general criteria are sent for review.

Conducting the Review

Reviewing needs to be conducted confidentially, the articles that have been sent for review should not be disclosed to a third party. In general, a single manuscript is reviewed by two anonymous reviewers.

The reviewer should consider the following things:

- Originality of the work

- Importance of the research to researchers in the field

- Interest for researchers or practitioners outside the field

- Appropriateness of the approach and experimental design

- Adequacy of experimental techniques

- Soundness of conclusions and interpretations

- Relevance of discussion

- Clarity of presentation and organization of the article

- Conducted according to the highest ethical standards

- English composition

The reviewer should focus on below questions in each section:

Title

- Does the title clearly represent the main theme and contents of the manuscript?

- Does it resemble with key words used in the manuscript?

Abstract

- Does it represent the concise form of the complete manuscript?

- Does the author(s) indicate what the objective of the study is, what is being researched, how it was carried on and what are the main findings, conclusions and implications?

Introduction

- Does it accurately describe what the author main objectives to achieve?

- Are you satisfied with the problems being investigated? Is the statement of the problems briefed satisfactorily?

- Do the contents in this section referred relevant, up to date and most recent research works published in referred journals to justify the context of research?

Methods

- Does the author mention satisfactorily how the data/information was collected?

- Does the author apply universally known methods to address the problems? Are there citations?

- Does the materials and methods replicable by other scientists of the same field?

Results

- Does the author clearly give the range of main and sub-main parameters minimum, maximum and mean values?

- Are the statistics correct? Does the author mention P-values in parenthesis after using the term significant?

- Are results laid out in a logical sequence?

- Does the author describe the results based on Tables, Figures, Photographs etc. used in the manuscript sequentially?

Discussion

- Does the author give clear cut results what has been discovered?

- Does the author provide adequate comments/arguments and support in support of findings?

- Are you satisfied with the comments/arguments made? Do the comments/arguments seem reasonable?

- Are the new findings articulated with the objectives and results?

- Are the recommendations based on the findings? What are the implications of the findings?

- Are the graphs clear and within the size? Units used in Y and X axis satisfactorily?

- If necessary can the author supply raw data to the reviewers?

References

- Are the references cited properly and follows all instructions comply with J-GMC-N guidelines?

Language and format

- Does the article follow J-GMC-N format accurately?

- Is the article readable and communicative in terms of language and style?

Ethics / Originality /Relevance

- Whether the article is a substantial copy of another work?

- Whether the article contains ideas and language without properly crediting the sources?

- Does the author(s) accept the conditions to keep the used data at least for three years safe after the publication?

- Do you have any financial conflict with the authors of the manuscript?

The reviewer should make a recommendation regarding an article as follows:

- Rejected due to poor quality, or out of scope

- Accept without revision

- Accept but needs revision (either major or minor)

In the latter case, clearly identify what revision is required, and indicate to Editor-in-Chief whether or not you would be happy to review the revised articles.