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# Interdisciplinary Team Approach during Covid-19: An Experience of Dhulikhel Hospital

Shrestha A

The interdisciplinary team approach is a complex approach that engages staff from different expertise sharing knowledge and skills for the better outcome of the patient care. The term Interdisciplinary or multidisciplinary is a broader term that includes all the members of health care teams with professionals and non-professionals.<sup>1-3</sup> Team work, collaborative work is very important with competence, confidence in a team and commitment to complete the task successfully which equally requires respect and trust among each other.<sup>1,4</sup>

COVID-19 (SarsCOV2) pandemic has taken lives globally, as of January 10 February 2023, 6,833,388 deaths have been reported to WHO.<sup>5</sup> Nepal witnessed 12,020 deaths by 10 February 2023, while the first case of death was reported from Dhulikhel Hospital.<sup>6,7</sup> Since the first case detection and witnessing death, Dhulikhel Hospital turned its services to the referral center for the COVID-19 cases requiring intensive care.<sup>8</sup> It was an arduous task for the health care providers overwhelmed fighting against the new disease, but the team effort made it possible.

Interdisciplinary team of staff, faculties, residents, students and interns from Internal Medicine and subspecialties, General Practice and Emergency Medicine, Forensic Medicine, Anesthesia, Surgery and subspecialties, Obstetrics and Gynecology and Pediatrics, Community Medicine, Research and Development, Public Health and all pre clinical faculties, Physiotherapy, Pharmacy, Laboratory and Radiodiagnosis, Dentistry, Administration including the pantry services, hygiene and security were all engaged in providing services.

The Nursing team at the core co-led as a hub and coordinated while delivering services at each level of care. It was not possible to deliver the patient care from triage to testing, home based services to the intensive care and ventilator services without the interdisciplinary team approach. The hospital mostly treated the severely ill COVID-19 patients during the second wave while more than 80% recovered from the severe illness.

With the emergence of new strains of viruses and diseases, a lesson from COVID-19 is very important, a lesson that any service provision needs a collaborative effort.<sup>9</sup> From health education, vaccination to critical care, in person services to tele health services, integrative care always provides quality service with better outcomes and we have witnessed that the interdisciplinary approach always brings best solutions to the challenging tasks. It is important that interdisciplinary collaborations are strengthened at each level of service to the policy decision making levels and be prepared for the future pandemics.

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# Clinical Profile and their Outcome among Neonates Admitted in Neonatal Intensive Care Unit (NICU): A hospital based retrospective study

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## ABSTRACT

### Background

Neonatal period is a critical period in which the newborn is susceptible to several problems including life threatening conditions. In spite of decreasing trend of neonatal mortality rate in Nepal, it is found to be decreasing at a slower pace. Therefore to improve neonatal outcome, it is important to identify the morbidity and mortality pattern of the neonates.

### Objective

To assess the pattern of diseases and outcomes of the neonates admitted in neonatal intensive care unit (NICU) of Dhulikhel Hospital, Nepal.

### Method

A hospital based retrospective study was conducted among all the neonates admitted in NICU of Dhulikhel hospital, Nepal. All the neonates admitted from January 2019 to December 2020 were included in the study. The required informations were collected from record book of neonatal intensive care unit. Descriptive and inferential analysis was done using Statistical Package for Social Sciences version 20.

### Result

Out of 618 admitted neonates the most common indications for neonatal intensive care unit admission were neonatal sepsis (45.6%), followed by perinatal asphyxia (33.2%), prematurity (25.4%), meconium aspiration syndrome (22.3%), respiratory distress syndrome (13.4%) and others. The overall mortality of the admitted neonates was 50 (8.1%). There was significant association of neonatal mortality with gestational age and weight of the newborn.

### Conclusion

Common causes for neonatal admission in neonatal intensive care unit are neonatal sepsis, birth asphyxia, meconium aspiration syndrome etc. To prevent, detect and manage neonatal health problem as early as possible, the public awareness regarding identification of neonatal health problems and need of early health seeking behavior is necessary. Similarly to improve neonatal outcome, early intervention and proper management of neonates are required.

## KEY WORDS

Neonates, Neonatal intensive care units, Neonatal morbidity, Neonatal mortality



## INTRODUCTION

The neonatal period is the most vulnerable time for a child's survival. Children face the highest risk of dying in their first month of life at an average global rate of 17 deaths per 1,000 live births in 2019.<sup>1</sup> Every year nearly 41% of all death among under-five children is in their first 28 days of life. Three quarters of all newborn deaths occur in the first week of life.<sup>2</sup> About 1 million newborns die within the first 24 hours.<sup>3</sup> The 'Sustainable Developmental Goals (SDG)' targeted to reduce neonatal mortality to at least as low as 12 per 1,000 live births by 2030.<sup>4</sup> According to the 'Nepal Demographic Health Survey (NDHS)' data of 2016: the neonatal mortality rate has decreased from 50 deaths per 1000 live births to 21 deaths per 1000 live births in the last 20 years (1996-2016) in Nepal. Despite of this decreasing trend, the existing neonatal mortality rate is still high and more prevailing in rural areas.<sup>5</sup>

According to the "World Health Organization (WHO)", preterm birth, birth asphyxia, infections and birth defects causes most neonatal deaths.<sup>4</sup> Several studies conducted in Nepal showed various conditions like neonatal sepsis, perinatal asphyxia, meconium aspiration syndrome, prematurity, low birth weight, hypothermia and neonatal jaundice being the common causes of neonatal admission.<sup>6-10</sup>

High neonatal mortality rate reflects the poor availability of quality and quantity of infrastructure and utilization of neonatal care of the country. Improved neonatal care can lead to increased infant survival.<sup>11</sup> Thus to improve neonatal outcome, it is crucial to identify the areas where health care can be improved.<sup>6</sup> Therefore this study is planned to identify the pattern of diseases and outcomes of the neonates admitted in NICU of Dhulikhel Hospital.

## METHODS

A hospital based retrospective study was conducted among all the neonates admitted in the NICU of Dhulikhel hospital. All the cases who were admitted from January 2019 to December 2020 were enrolled into the study. A total of 618 neonates were included. The ethical approval was obtained from 'Institutional Research Committee (IRC)' of 'Kathmandu University School of Medical Sciences (KUSMS)'.

All the required information related to neonatal characteristics, their disease patterns and outcomes were collected from record book of NICU. The obtained data were coded and analysis was done using 'Statistical Package for Social Sciences (SPSS)' version 20. Frequency and percentage for descriptive statistics and Pearson's chi square test was applied to find out the association between dependent and independent variables at 95% confidence interval. A p value less than 0.05 was considered to be significant.

## RESULTS

Out of 618 neonates, significant percentages (89.3%) of the respondents were of age up to 7 days at the time of admission. The mean age on admission of the neonates was 3.02 days ( $\pm 5.60$  SD). Nearly two third (64.9%) of the neonates were male. Most (74.4%) of the neonates were term delivery. Nearly three fourth (71.7%) of the neonates had normal weight on admission. More than three fifth (63.9%) of the neonates were delivered in Dhulikhel hospital. Regarding the duration of stay in NICU, most (68.8%) of the neonates were admitted up to 7 days. The mean length of NICU stay among admitted neonates was 7.16 days ( $\pm 5.81$  SD) (table 1).

**Table 1. Profile of the Neonates Admitted in Neonatal Intensive Care Unit (NICU) n= 618**

| Variables                    | Frequency (%) |
|------------------------------|---------------|
| <b>Age at admission</b>      |               |
| 0 – 7 days                   | 552(89.3)     |
| 8 – 14 days                  | 27 (4.4)      |
| 15 – 21 days                 | 18 (2.9)      |
| 22 – 28 days                 | 18 (2.9)      |
| > 28 days                    | 3 (0.5)       |
| <b>Sex</b>                   |               |
| Female                       | 217(35.1)     |
| Male                         | 401(64.9)     |
| <b>Gestational age</b>       |               |
| Preterm                      | 157 (25.4)    |
| Term                         | 460 (74.4)    |
| Post-term                    | 1 (0.2)       |
| <b>Weight on admission</b>   |               |
| Extremely low birth weight   | 3 (0.5)       |
| Very low birth weight        | 34 (5.5)      |
| Low birth weight             | 138(22.3)     |
| Normal weight                | 443 (71.7)    |
| <b>Place of delivery</b>     |               |
| In-born                      | 395 (63.9)    |
| Out-born                     | 223 (36.1)    |
| <b>Duration of NICU stay</b> |               |
| 1 – 7 days                   | 425 (68.8)    |
| 8 – 14 days                  | 122(19.7)     |
| 15 – 21 days                 | 52(8.4)       |
| $\geq 22$ days               | 19(3.1)       |

The most common indications for NICU admission among neonates were neonatal sepsis (45.6%), followed by perinatal asphyxia (33.2%), prematurity (25.4%), meconium aspiration syndrome (22.3%), respiratory distress syndrome (13.4%), pneumonia (12.1%) and others (table 2).

Out of 618 neonates, nearly one tenth (8.9%) of the neonates had congenital anomalies. Among them common congenital anomalies observed among neonates was congenital heart disease (5.0%) (table 3).

**Table 2. Distribution of Health Conditions among Admitted Neonates**  
n= 618

| Variables                                    | Frequency (%) |
|--|---------------|
| Neonatal Sepsis                              | 282 (45.6)    |
| Perinatal asphyxia (PA)                      | 205 (33.2)    |
| PA with HIE                                  | 147 (23.8)    |
| PA without HIE                               | 58 (9.4)      |
| Prematurity                                  | 157 (25.4)    |
| Meconium aspiration syndrome (MAS)           | 138 (22.3)    |
| Respiratory Distress Syndrome                | 83 (13.4)     |
| Pneumonia                                    | 75 (12.1)     |
| Neonatal jaundice                            | 44 (7.1)      |
| Necrotizing Enterocolitis (NEC)              | 23 (3.7)      |
| Neonatal seizure                             | 19 (3.1)      |
| Disseminated Intravascular coagulopathy(DIC) | 19 (3.1)      |
| Neonatal meningitis                          | 16 (2.6)      |
| Transient tachypnea of newborn (TTN)         | 16 (2.6)      |
| Intraventricular hemorrhage                  | 13 (2.1)      |
| Blood incompatibilities                      | 11 (1.8)      |
| RH incompatibility                           | 6 (1.0)       |
| ABO incompatibility                          | 5 (0.8)       |
| Apnea of prematurity                         | 8 (1.3)       |
| Pulmonary hemorrhage                         | 5 (0.8)       |
| Congenital malformation and syndromes        | 55 (8.9)      |

**Table 3. Distribution of Congenital Defects among Admitted Neonates**  
n= 618

| Variables                           | Frequency (%) |
|-------------------------------------|---------------|
| Presence of congenital anomaly      | 55 (8.9)      |
| Congenital Heart disease            | 31(5.0)       |
| <b>Gastrointestinal system</b>      |               |
| Jejunal atresia                     | 3 (0.5)       |
| Cleft lip and palate                | 2 (0.3)       |
| Tracheoesophageal fistula           | 2 (0.3)       |
| Volvulus                            | 2 (0.3)       |
| Hirschsprunge disease               | 2 (0.3)       |
| Imperforated anus                   | 2 (0.3)       |
| Pyloric stenosis                    | 1 (0.2)       |
| Gastroschisis                       | 1 (0.2)       |
| Oesophageal atresia                 | 1(0.2)        |
| Inguinal hernia                     | 1(0.2)        |
| <b>Genitourinary system</b>         |               |
| Hypospadias                         | 2 (0.3)       |
| Undescended testis                  | 2 (0.3)       |
| Malrotated and malpositioned kidney | 1 (0.2)       |
| Congenital hydrocele                | 1(0.2)        |
| Hydronephrosis                      | 1 (0.2)       |
| <b>Suspected Down's Syndrome</b>    | 4 (0.6)       |
| <b>Hydrocephalus</b>                | 2 (0.3)       |
| <b>Clubfoot</b>                     | 1 (0.2)       |

**Table 4. Distribution of Outcome among Admitted Neonates**  
n= 618

| Variables                    | Frequency (%) |
|------------------------------|---------------|
| Improved                     | 480 (77.7)    |
| Expired                      | 50 (8.1)      |
| Leave against medical advice | 70 (11.3)     |
| Referred                     | 10 (1.6)      |
| Discharged on request        | 8 (1.3)       |

Among all the admitted neonates, more than three fourth (77.7%) of the neonates were improved while less than one tenth (8.1%) of neonates were expired (table 4).

Out of 618 admitted neonates, only 530 neonates were included to assess the association between outcome of neonates and neonatal profile. Those neonates who were referred, left against medical advice and got discharge on request were not included to assess association. The neonatal mortality was found to be significantly higher (p value 0.006) among the preterm neonates than among term neonates. Similarly, low birth weight neonates had significantly higher (p value 0.015) neonatal mortality than that of normal weight neonates. Besides that there were no significant association between outcome of neonates and other variables like age at admission, sex, place of delivery, duration of NICU stay, presence of congenital defects (table 5).

**Table 5. Association between Neonatal Outcome and Neonatal Profile**  
n=530

| Variables                             | Neonatal outcome |               | p value |
|---------------------------------------|------------------|---------------|---------|
|                                       | Improved f (%)   | Expired f (%) |         |
| <b>Age at admission</b>               |                  |               |         |
| ≤ 7 days                              | 430 (91.1)       | 42 (8.9)      | 0.229   |
| > 7 days                              | 50 (86.2)        | 8 (13.8)      |         |
| <b>Sex</b>                            |                  |               |         |
| Female                                | 166 (91.7)       | 15 (8.3)      | 0.515   |
| Male                                  | 314 (90.0)       | 35 (10.0)     |         |
| <b>Gestational age</b>                |                  |               |         |
| Preterm                               | 108 (84.4)       | 20 (15.6)     | 0.006   |
| Term and postterm                     | 371 (92.5)       | 30 (7.5)      |         |
| <b>Weight on admission</b>            |                  |               |         |
| Normal weight                         | 356 (92.5)       | 29 (7.5)      | 0.015   |
| Low birth weight                      | 124 (85.5)       | 21 (14.5)     |         |
| <b>Place of delivery</b>              |                  |               |         |
| In-born                               | 324 (92.3)       | 27 (33.1)     | 0.055   |
| Out-born                              | 156 (87.2)       | 23 (12.8)     |         |
| <b>Duration of NICU stay</b>          |                  |               |         |
| ≤ 7 days                              | 314 (89.2)       | 38 (10.8)     | 0.132   |
| > 7 days                              | 166 (93.3)       | 12 (6.7)      |         |
| <b>Presence of congenital defects</b> |                  |               |         |
| Yes                                   | 33 (82.5)        | 7 (17.5)      | 0.070   |
| No                                    | 447 (91.2)       | 43 (8.8)      |         |

## DISCUSSION

The two years retrospective data showed a total of 618 neonatal admission in NICU of Dhulikhel Hospital. Among these admitted neonates, majority (89.3%) of the neonatal admission were within first 7 days of life out of which 77.7% admissions were within first 24 hours of life. Other similar studies conducted in different parts of Nepal also showed that most of the neonatal admissions were within first 24 hours of life ranging from 44.5 to 73.35%.<sup>6,8,9,12</sup> This finding indicates that most of neonates develops health problems in early hours of life therefore early management of neonates is important. In this study, most (64.9%) of the admitted neonates were male which was consistent with the similar studies conducted in Nepal.<sup>7,12</sup> This indicates that male child are brought to health facility for treatment more than female which is one of the indication of gender preference towards male child. About 28.3% of the admitted neonates have low birth weight (LBW). This finding is relatively higher than the findings of the studies conducted in Jumla (12.8%) and Nepalgunj (18%).<sup>9,13</sup> The possible reason behind increased birth of LBW babies may be due to inadequate information regarding maternal health, importance of nutrition as well as low socioeconomic status. Regarding the length of the neonatal stay in NICU, most (68.8%) of the neonates were admitted from one to seven days which is almost near (78.1%) to the finding of the study conducted in Jumla.<sup>9</sup>

Clinical indications for neonatal admissions vary from place to place. The finding of this study showed that the most common indications for NICU admission among neonates were neonatal sepsis (45.6%), followed by perinatal asphyxia (33.2%), prematurity (25.4%), meconium aspiration syndrome (22.3%) and respiratory distress syndrome (13.4%). Similar studies conducted in different parts of Nepal showed neonatal sepsis as the leading cause of neonatal admission in NICU which ranges from 32.6 to 60.26%.<sup>9,13-17</sup> The possible reason behind increased number of neonatal sepsis could be due to chances of acquiring sepsis at any period i.e. intrauterine period, during delivery time or after delivery at nursery itself.<sup>9</sup> Hence preventive measures such as maintenance of good hygiene, strict aseptic precaution adopted during antenatal, intrapartum and postnatal period is important to reduce the incidence of neonatal sepsis.

Second common indication for neonatal admission was perinatal asphyxia (33.2%). Consistent finding (37.2%) was noted in a study conducted in Pokhara.<sup>15</sup> In contrast to this finding, other similar studies showed lower number of neonates with asphyxia which ranges from 4.63% to 23.1%.<sup>6,9,12-17</sup> This finding highlights the need of focusing on strengthening the skills of skilled birth attendant, and health personnel who perform neonatal resuscitation.

The next common indication for neonatal admission was prematurity (25.4%) which was consistent with the study conducted in Dharan.<sup>12</sup> This finding was found to be lower

compared to the study conducted in Jordan (33.4%).<sup>18</sup> This variation could be probably due to differences in geographical area as well as differences in pattern of perinatal care. Very close monitoring and advanced care is required for better outcome of newborns.

Likewise meconium aspiration syndrome (22.3%) was found to be another common indication for neonatal admission. This finding was found to be higher compared to study conducted in Jordan (1.2%) and in Nepal (Nepalgunj (7%), Pokhara (8.04%), Jumla (13.90%)).<sup>9,13,17,18</sup>

Respiratory distress syndrome was found among 13.4% of the neonatal admission. This finding was found to be lower than the study conducted in India (19.95%) and Jordan (28.9%).<sup>18,19</sup>

This study showed that about 8.9% of the neonates had congenital anomalies out of which congenital heart disease being the most common anomaly i.e. 5.0%. The finding of this study is consistent with the study conducted in India (7.3%) and Pokhara (8.39%) whereas lower incidence was noted in study conducted other parts of Nepal ranging from 2 to 4.06%.<sup>12,13,17,19</sup>

Among all the admitted neonates, 77.7% of neonates were improved while about 8.1% of the neonates have mortality. Several other similar studies conducted in various parts of Nepal showed neonatal mortality ranging from 3.32% to 20.2% and 11.28% in India.<sup>9,12-17,19</sup> These variation might be due to several conditions like severity of presenting illness of neonates, the time lapse between deterioration of health condition and arrival in hospital, availability of the treatment facilities in neonatal care unit.

Out of 618 admitted neonates, only 530 neonates who were either improved or expired were included to assess the association between neonatal outcome and other neonatal variables. The neonatal mortality was significantly higher ( $p=0.022$ ) among the preterm neonates than among term and post-term neonates. This finding is similar with the finding of the study conducted in India ( $p < 0.001$ ) and Jordan ( $p$  value 0.001).<sup>11,18</sup> Similarly low birth weight neonates had significantly higher ( $p$  value 0.015) neonatal mortality than that of normal weight neonates which is consistent with the finding of the study conducted in India ( $p$  value 0.001).<sup>11</sup> Probable reason for these findings could be due to anatomical and physiological prematurity of the neonatal organs among preterm and low birth weight neonates.

Besides that no significant association was noted with outcome of neonates and other variables like age at admission, sex of neonates, place of delivery, duration of NICU stay.

Since this is a retrospective study in which the data was collected through the medical records only, only those information which were recorded in the medical record book were collected. Therefore other important

information related to maternal condition, deliveries which can add up important information could not be assessed.

## CONCLUSION

The predominant cause for neonatal admission in NICU was found to be neonatal sepsis followed by prematurity, birth asphyxia, MAS, respiratory distress syndrome and others. Most of the morbidities and mortalities of the neonates can be minimized by improving the antenatal care of pregnant women, timely interventions and referral to tertiary care centers for delivery of high-risk pregnancies. Besides that, the timely arrival of patient to health facility is also important for early management and recovery of the neonatal health problems.

This study could not assess certain important variables related to mother and neonates as this was a retrospective

study. Therefore it would be more effective if this study is conducted as a prospective study, which will help to assess all the important information required. Besides that, according to the findings of study, for prompt management of neonatal morbidities, the public awareness related to identification of neonatal health problems and necessity of early health seeking behavior is necessary. Besides that training to health professionals, procurement of necessary equipments are also required.

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# Early Initiation of Antenatal Visit among Pregnant Women Attending at Tertiary Level Hospital

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## ABSTRACT

### Background

Early initiation of antenatal visit is an essential component of service to improve maternal and newborn health and prevent pregnancy related adverse outcome. The world health organization recommends first antenatal visit should be offered within first trimester. However early antenatal visit is the predominant problem in most developing countries including Nepal.

### Objective

To determine the proportion of early initiation of antenatal visit and its associated factors among pregnant women.

### Method

A quantitative descriptive cross-sectional study was conducted among 228 pregnant women attending antenatal outpatient department of Dhulikhel Hospital. A self-constructed semi structured questionnaires were used for data collection. Interview technique was used. Systematic random sampling technique was used. Descriptive and inferential statistics was used to find out the significant association in early initiation of antenatal visit using SPSS version 23.

### Result

The study shows slightly more than half of the respondents (53%) had early initiation of antenatal visit whereas less than half of the respondents (47%) had delay initiation of antenatal visit. Educational status, women's occupation, family income, perceived right time for early initiation of antenatal visit, timing of recognition of pregnancy and decision maker were associated with early initiation of antenatal visit.

### Conclusion

This study suggests that slightly more than half of the respondents had early initiation of antenatal visit. Education should be provided regarding early initiation of antenatal visit to women who visited antenatal department.

## KEY WORDS

*Antenatal visit, Pregnant women*



## INTRODUCTION

Antenatal care is care given to pregnant women from the time of conception until the beginning of labor to avoid and minimize possible risk of morbidity and mortality.<sup>1</sup> WHO aims at ensuring that all pregnant women and their fetus globally receives proper health service during the period of pregnancy. Antenatal care is one pillar among the six pillars of the safe motherhood.<sup>2</sup>

WHO antenatal care (ANC) model focused to provide respectful individualized care at every contact. It ensures that each contact delivers effective services to increase the likelihood of positive pregnancy outcomes. It recommends pregnant women to have their first contact in the first 12 weeks' of gestation, with subsequent contacts taking place at 20, 26, 30, 34, 36, 38 and 40 weeks' of gestation.<sup>3</sup> But only 65% women have initiated the first antenatal visit within 12 weeks of gestation in Nepal.<sup>4</sup> Nepal has committed to doing its part to achieve Sustainable Development Goal (SDG) targets include reduction of MMR to less than 70 per 100 thousand live births by 2030.<sup>5</sup>

Early initiation of antenatal visit is an essential component of service to improve maternal and newborn health. However, the associated factors of early initiation of antenatal visit are not same across different countries.<sup>6</sup> Therefore, this study aimed at determining the proportion of early initiation of antenatal visit and factors associated with it among pregnant women attending antenatal outpatient department of Dhulikhel Hospital.

## METHODS

Quantitative approach with descriptive cross sectional study was conducted from May 5 to June 1, 2019 in antenatal care outpatient department of Dhulikhel Hospital. Estimated proportion (p) was taken 65% based on literature review for sample size calculation and calculated sample size was 228.<sup>4</sup> Probability, systematic random sampling method was used. All trimester pregnant women were included.

A self-constructed semi-structured questionnaire was used. The questionnaires were developed in English version and then translated in Nepali version. PART I: Socio-demographic data and pregnancy related questions. Part II comprised questions related to early initiation of antenatal visit by their ANC card and question related to reason for delay initiation of antenatal visit. Antenatal care received within 12 weeks of gestation from any health institution was categorized as an early initiation of antenatal visit. Content validity was ensured by extensive literature review and consulting experts in the field of nursing research and related subjects. Data collection tool was pre-tested in 10% of the total sample that was 23. Face to face interview method was used.

An ethical clearance was obtained from IRC-KUSMS. Written consent was taken from each respondent prior to data collection. Privacy and confidentiality of the respondents was maintained and they weren't forced to participate. SPSS version 23 was applied for data analysis. Descriptive statistics (percentage and frequency) and inferential statistics (chi-square test) were used.

## RESULTS

Out of 228 respondents, more than half of the respondents (56.1%) were in age group between 25-35 years. The mean age and standard deviation of respondents was 25.48±4.392. Majority of the respondents (95.6%) were literate and few of them (4.4%) were illiterate. The ethnic composition of the respondents shows that nearly more than three fifth of respondents (61%) belongs to Janajati and nearly one third of the respondents (32.5%) belongs to Brahmin/chhetri. Occupation wise homemaker (68.4%) represented the major proportion. Nearly half of respondents (49.6%) represent joint family. Similarly less than half of respondents (48.7%) had adequate family income. Likewise nearly one third of the respondent husbands (30.3%) were service holder (table 1).

This study shows that nearly more than half of respondents (51.3%) were multigravida and only 1% had grand multigravida. Half of the respondents (50%) were perceived right time of first antenatal visit should be within 12 weeks. Likewise one fourth of respondents (25%) had don't know about right time of first antenatal visit. Similarly most of the respondents (86.4%) were planned pregnancy. Out of 228 respondents (82.5%) were recognized their pregnancy within 1-2 month of period which represents the largest group. More than Three fifth of the respondents (62.3%) motivated for antenatal visit by themselves, likewise (16.7%) of the respondents motivated for antenatal by their husbands, likewise lowest (2.6%) respondents motivated antenatal visit by FCHV. Likewise less than half of the respondents (46.9%) were made decision by themselves for antenatal visit (table 2).

Out of 228 respondents, more than half of the respondents (53%) had early initiation of antenatal visit. Whereas nearly half of the respondents (47%) of them had delay initiation of antenatal visit (figure 1).

This study revealed that as nearly one third of respondents (67.0%) had lack of knowledge on right timing for first antenatal visit, (16%) had lack of time, whereas 3.9% had delayed recognition of pregnancy, and (3.1%) of respondents perceived not necessary for antenatal visit (figure 2).

There was statistically significant association between early initiation of antenatal visit and educational level of respondents ( $p=0.004$ ). There was statistically significant association between occupation and early initiation

**Table 1.** Socio-demographic Characteristics of the Respondents (n=228)

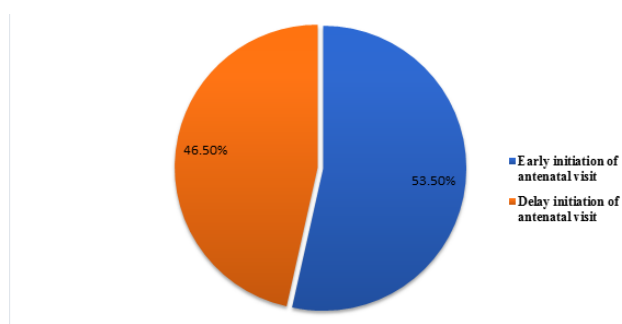
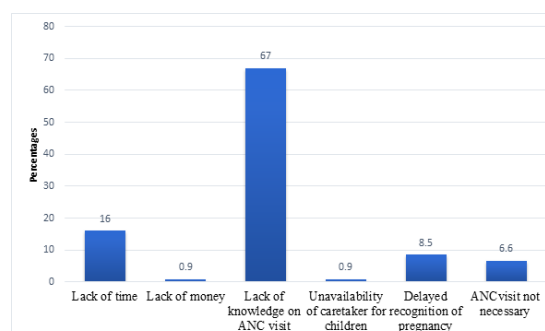
| Characteristics              | Frequency  | Percentages (%) |
|------------------------------|------------|-----------------|
| Mean SD                      | 25.48±4.39 |                 |
| <b>Age (in years)</b>        |            |                 |
| 15-25                        | 93         | 40.8            |
| 25-35                        | 128        | 56.1            |
| > 35                         | 7          | 3.1             |
| <b>Education status</b>      |            |                 |
| Illiterate                   | 13         | 5.7             |
| Literate                     | 215        | 94.3            |
| <b>Education level</b>       |            |                 |
| Primary level                | 40         | 17.5            |
| Secondary level              | 111        | 48.7            |
| Higher secondary level       | 64         | 28.1            |
| <b>Ethnicity</b>             |            |                 |
| Brahmin/chhetri              | 74         | 32.5            |
| Janajati                     | 139        | 61.0            |
| Dalit                        | 11         | 4.8             |
| Others                       | 4          | 1.7             |
| <b>Occupation</b>            |            |                 |
| Home maker                   | 156        | 68.4            |
| Farmer                       | 9          | 3.9             |
| Service                      | 29         | 12.7            |
| Business                     | 25         | 11.0            |
| Tailor                       | 9          | 3.9             |
| <b>Types of family</b>       |            |                 |
| Nuclear                      | 101        | 44.3            |
| Joint                        | 113        | 49.6            |
| Extended                     | 14         | 6.1             |
| <b>Family income</b>         |            |                 |
| Not adequate                 | 55         | 24.1            |
| Adequate                     | 111        | 48.7            |
| Adequate and can save        | 62         | 27.2            |
| <b>Occupation of husband</b> |            |                 |
| Farmer                       | 40         | 17.5            |
| Service                      | 69         | 30.3            |
| Business                     | 54         | 23.7            |
| Driver                       | 26         | 11.4            |
| Labor                        | 39         | 17.1            |

antenatal visit (p value = 0.015). There was no statistically significant association between types of family and early initiation of antenatal visit (p value = 0.798). There was statistically significant association between early initiation of antenatal visit and family income (p value = 0.009) (table 3).

There was statistically significant association found between early initiation of antenatal visit and perception on right timing for first antenatal visit, recognition of pregnancy, motivating factor and decision maker for antenatal visit (table 4).

**Table 2.** Pregnancy Related Characteristics of Respondents (n=228)

| Characteristics                                  | Frequencies | Percentage |
|--|-------------|------------|
| <b>Gravida</b>                                   |             |            |
| Primi  | 108         | 47.4       |
| Multi  | 117         | 51.3       |
| Grand multi                                      | 3           | 1.2        |
| <b>Perceived right time for ANC visit</b>        |             |            |
| within 12 weeks                                  | 114         | 50.0       |
| after 12 weeks                                   | 57          | 25.0       |
| don't know                                       | 57          | 25.0       |
| <b>Intention of pregnancy</b>                    |             |            |
| Planned  | 197         | 86.4       |
| Unplanned  | 31          | 13.6       |
| <b>Time of recognition of pregnancy</b>          |             |            |
| within 1-2 months                                | 188         | 82.5       |
| within 2-3 months                                | 26          | 11.4       |
| after 3 months                                   | 14          | 6.1        |
| <b>Women responses to whom motivated for ANC</b> |             |            |
| Self   | 142         | 62.3       |
| Husband  | 38          | 16.7       |
| Friends  | 14          | 6.1        |
| Head of family                                   | 15          | 6.6        |
| FCHV   | 6           | 2.6        |
| HP/PHC/private hospital                          | 13          | 5.7        |
| <b>Decision maker for ANC visit</b>              |             |            |
| Self   | 107         | 46.9       |
| Husband  | 106         | 46.5       |
| Mother in law                                    | 14          | 6.1        |
| Father in law                                    | 1           | 0.4        |

**Fig. 1.** Proportion of Initiation of antenatal Visit among Pregnant Women**Fig. 2.** Reason for Delay Initiation of Antenatal Visit among Pregnant Women

**Table 3.** Association between Initiation of Antenatal Visit and Socio-demographic Characteristics (n=228)

| Characteristics           | Early initiation of antenatal visit f (%) | Delay initiation of antenatal visit f (%) | p value |
|---------------------------|---|---|---------|
| <b>Maternal Age</b>       |   |   |         |
| Less than 25              | 56 (48.3)                                 | 60 (51.7)                                 | 0.113   |
| More than 25              | 66 (58.9)                                 | 46 (41.1)                                 |         |
| <b>Level of education</b> |   |   |         |
| Undergraduate             | 78 (46.7)                                 | 86 (52.4)                                 | 0.004   |
| Graduate                  | 44 (68.8)                                 | 20 (31.4)                                 |         |
| <b>Occupation</b>         |   |   |         |
| Homemaker                 | 75 (48.1)                                 | 81 (51.9)                                 |         |
| Others                    | 47 (65.3)                                 | 25 (34.7)                                 | 0.015   |
| <b>Types of family</b>    |   |   |         |
| Nuclear                   | 55 (54.5)                                 | 46 (45.5)                                 |         |
| Joint                     | 67 (52.8)                                 | 60 (47.2)                                 | 0.798   |
| <b>Family income</b>      |   |   |         |
| Inadequate                | 21 (38.2)                                 | 34 (61.8)                                 |         |
| Adequate                  | 101 (58.4)                                | 72 (41.6)                                 | 0.009   |

## DISCUSSION

Current study revealed that, the early initiation of antenatal visit were made by more than half of the respondents (53%) which is lower than the NDHS report (65%).<sup>4</sup> This difference might be due to setting of study, study duration and sample size. Moreover, this result is congruent with study done in North West Ethiopia the proportion of early initiation of antenatal visit was (51.20%).<sup>7</sup>

Maternal age > 25 years were found to be more likely to have early initiation of ANC visit in present study (58.9%) but not statistically significant association (p value = 0.113) this result was supported study done in South Africa (p value = 0.981).<sup>8</sup>

In this study women education level have significant association (p value = 0.004) with early initiation of antenatal visit. Women who were graduate more likely to initiate early antenatal visit (68.8%). Some studies compatible this result like Bangladesh and Addis Ababa Ethiopia.<sup>9,10</sup> Higher the education level mother was positively associated with early initiation of antenatal visit. This is possibly because educated women may know about right time of early initiation of antenatal visit.

In this study, occupation is statistically significant association with early initiation of antenatal visit. This result is corresponding to the study done in Addis Ababa Ethiopia and south Africa and contrast findings was found in the study done Debre Markos North West Ethiopia.<sup>10-12</sup> Family incomes were statistically significant with early initiation of antenatal visit (p value 0.009). This result also supported by study done in Bangladesh.<sup>9</sup>

Perception on the right time of antenatal visit was found to be statistically significant association with early initiation

**Table 4.** Association between Initiation of Antenatal Visit and Pregnancies Related Variables (n=228)

| Characteristics                                   | Early initiation of antenatal visit f (%) | Delay initiation of antenatal visit f (%) | p value |
|---|---|---|---------|
| <b>Gravidity</b>                                  |   |   |         |
| Primiparous                                       | 60 (55.6)                                 | 48 (44.4)                                 | 0.557   |
| Multiparous                                       | 62 (51.7)                                 | 58 (48.3)                                 |         |
| <b>Perceived right time for ANC visit</b>         |   |   |         |
| Within 12 weeks                                   | 84 (73.7)                                 | 30 (26.3)                                 |         |
| After 12 weeks                                    | 16 (28.1)                                 | 41 (71.9)                                 | 0.001   |
| Don't know  | 22 (38.6)                                 | 35 (61.4)                                 |         |
| <b>Intention of pregnancy</b>                     |   |   |         |
| Planned   | 107 (54.3)                                | 90 (45.7)                                 |         |
| Unplanned   | 15 (48.4)                                 | 16 (51.6)                                 | 0.539   |
| <b>Recognition of pregnancy</b>                   |   |   |         |
| Within one month of pregnancy                     | 112 (59.6)                                | 76 (40.4)                                 | 0.001   |
| More than one month of pregnancy                  | 10 (25.0)                                 | 30 (75.0)                                 |         |
| <b>Women response who motivated for ANC visit</b> |   |   |         |
| Self  | 90 (63.4)                                 | 52 (36.6)                                 | 0.001   |
| Others  | 32 (37.2)                                 | 54 (62.8)                                 |         |
| <b>Decision maker for ANC visit</b>               |   |   |         |
| Self  | 71 (66.4)                                 | 36 (33.6)                                 |         |
| Others  | 51 (42.1)                                 | 70 (57.9)                                 | 0.001   |

of antenatal visit. This result also supported by study done in South Africa and Gondar town Ethiopia (p value = 0.001 and 0.003).<sup>11,12</sup> This might be because if women already perceived about right time of antenatal visit, they may go early for antenatal checkup.

Intention of pregnancy was no statistically significant association with early initiation of antenatal visit. Although results shows that women with planned pregnancy were more likely to start antenatal visit earlier than the unplanned ones. A contrast finding was study done in Debre Markos Ethiopia (p value = 0.001).<sup>7</sup>

The recognition of pregnancy is significantly associated with early initiations of antenatal visit. This findings (p value = 0.001), also supported by studies done in, northern Ethiopia.<sup>6</sup> Women who had early recognize their pregnancy more likely to early initiation of antenatal visit. Decision maker for antenatal visit was found statistically significant association with early initiation of antenatal visit (p value = 0.001). This result is support by Study done in Gondar town Ethiopia.<sup>12</sup>

Nearly one third of the respondents (67.0%) answered that lack of knowledge on right timing of antenatal visit was the reason of delay initiation of antenatal visit. This result is higher to study done in Ndola district Zambia which was (50.49%).<sup>13</sup> Similarly study done in South Africa it shows that being too busy is higher proportion for delay initiation of antenatal visit.<sup>11</sup> Delay recognition of the pregnancy is



one of the reason for delay initiation of antenatal visit the proportion shows that study done in Zambia 66.88%) and Debre Markos town Ethiopia (22.4%).<sup>7,13</sup>

## CONCLUSION

This study identified that more than half respondents made their early antenatal visit. Educational status, women's occupation, family income, perceived right time for early initiation of antenatal visit, timing of recognition of pregnancy and decision maker were associated with early initiation of antenatal visit. Nearly one third of the respondents answered that lack of knowledge on right

timing of antenatal visit was the reason of delay initiation of antenatal visit. We should provide education on right timing of early antenatal visit to all reproductive age group women. We can also raise awareness on early initiation of antenatal visit in all level of health care facility including community.

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# Psychological Problems and Associated Physical Symptoms amongst Healthcare Workers of Dhulikhel Hospital during COVID-19 Pandemic

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## ABSTRACT

### Background

Coronavirus (COVID-19) pandemic has become a serious global health threat. Increased workloads, physical exhaustion, inadequate personal equipment, nosocomial transmission, have dramatic effects on the physical and mental well-being of healthcare workers.

### Objective

To assess the psychological problems and associated physical symptoms among healthcare workers of Dhulikhel Hospital during COVID-19 pandemic.

### Method

A cross-sectional study was conducted in Dhulikhel hospital, Kavre, Nepal where 408 healthcare workers participated who were selected by proportionate stratified random sampling technique. The self-administered interview questionnaire of Depression, Anxiety and Stress Scale was used to collect the data through Google forms. Data was analyzed using descriptive (frequency, percentage and median), inferential (Chi-square test) and binary logistic regression.

### Result

Among 408 healthcare workers, 75 (18.4%), 151 (37%) and 47 (11.5%) had moderate to extremely severe depression, anxiety and stress respectively and four or more physical symptoms were reported by 177 (43.4%) where the commonest physical symptom was lethargy 229 (56.1%). Female healthcare workers were more likely to have depression (AOR=2.97), anxiety (AOR=5.69) and stress (AOR=4.91) than male healthcare workers. Unmarried health workers were more likely to have anxiety (AOR=2.96) than married. Those with any kind of comorbidity were more likely to have anxiety (AOR=5.2). Healthcare workers with any physical symptoms were at greater odds of having depression (AOR=2.91), anxiety (AOR=4.84) and stress (AOR=11.22).

### Conclusion

Healthcare workers are at higher risk of developing depression, anxiety and stress as they are the integral part of the fight against COVID-19 outbreak. Effective strategies like mental health assessment and psychosocial counselling are needed towards improving mental health of healthcare professionals during the pandemic.

## KEY WORDS

COVID-19, Healthcare workers, Pandemic, Physical symptom, Psychological problems

## INTRODUCTION

Corona virus disease (COVID-19), a cluster of acute respiratory disease with unknown cause emerged in the city of Wuhan, China in late December 2019.<sup>1</sup> Looking at the stretch of countries outbreak, WHO declared it a Public Health Emergency on 30<sup>th</sup> January, 2020 and a pandemic on March 11, 2020.<sup>2,3</sup>

Globally, 539119771 cases are infected and 6322311 deaths has been occurred due to COVID-19 till the date by 24 June, 2022.<sup>4</sup> Nepal, a South Asian country, is no exception and is affected by the pandemic reporting 979512 positive cases and 11952 deaths with 967372 recovered by 25 June, 2022.<sup>5</sup>

Fronting this critical situation, healthcare professionals are directly involved in the diagnosis, treatment and care of patients with COVID-19 and are at risk of developing psycho-physiological distress such as depression, anxiety, stress, insomnia, headache, denial, anger and fear.<sup>6,7</sup> The psychological impact of contagious disease outbreaks on healthcare workers is not something that is being recorded for the first time during this ongoing global pandemic but during the 2003 SARS outbreak, healthcare workers reported higher levels of stress, anxiety, poor sleep, worry about health and fear of social contact too.<sup>8</sup> In addition to the physical manifestations of various diseases, some symptoms may arise due to the psychological sequelae of COVID-19 outbreak. Such symptoms have been reported with increased prevalence during and after the outbreaks. The commonly reported symptoms range from more specific symptoms like pain to non-specific ones like fatigue, lethargy and weakness.<sup>9</sup>

Providing timely and appropriately mental health care through hotline services, clear communication, multidisciplinary teams, including mental health professionals is vital in order to enhance psychological resilience.<sup>10</sup> Thus, this study aimed to assess psychological problems and associated physical symptoms amongst healthcare workers of Dhulikhel hospital during COVID-19 pandemic.

## METHODS

A quantitative, cross-sectional study was conducted among the healthcare workers doctors, nurses and paramedics (pharmacist, radiologic technologist, laboratorian, and physiotherapist) of Dhulikhel hospital, Kavre, Nepal during first and second wave of COVID-19 from 3<sup>rd</sup> September 2020 to 29<sup>th</sup> June 2021. The sample size was 422 determined using the Cochran formula <sup>11</sup>:  $n = \frac{z^2pq}{d^2}$  Where, n= sample size, z=reliability coefficient for the desired confidence interval (CI) of 95%, p=the prevalence of =50% Q=1-p d=degree of precision=0.05 (probability of error). Confidence interval of 95%, Margin of error 5%.  $n = (1.96)^2 \times 0.5 \times 0.5 = 0.9604$

=384 (0.05)<sup>2</sup> 0.0025. By adding the 10% non-response rates to the sample size =384+38.4 =422.4 = 422 Proportionate stratified random sampling technique was used to select the participants. Healthcare workers from 18 to 65 years working in Dhulikhel Hospital; those who have access to the internet were included in the study.

The online structured self-administered questionnaire was developed, with an informed consent form attached to it which was made available through Google forms before data collection. The link of the questionnaire was sent through social media (messenger and viber) and email to the participants. Once the participants clicked on the link they were given information about the objectives of study. Subsequently, if they consented to participate, they were taken to the next step (first, second and third part) of the study. The first part of the study questionnaire collected socio-demographic information, second part, psychological problems information and third part collected information related to physical symptoms. Self-administered questionnaire was based on validated Depression, Anxiety and Stress Scale (DASS 21) tool to measure depression, anxiety and stress consist of 21-item questionnaire designed to measure the emotional states of depression, anxiety and stress. Each of three items consists of 7 items. Questions 3,5,10,13,16,17 and 21 formed the depression, questions 2,4,7,9,15,19 and 20 formed the anxiety and questions 1,6,8,11,12,14 and 18 formed the stress subscale and in total 21 items were assessed. A four points rating scale was used for depression, anxiety and stress related statements, where 0 score was for did not apply, 1 score for applied to some degree, 2 score for applied to a considerable degree and 3 score for applied very much. The scores for each of the three components were calculated by summing up the scores, and multiplied by two to get the final score. Cut-off scores of >9, >7 and >14 represent a positive screen of depression, anxiety and stress, respectively.<sup>12</sup>

Regarding physical symptoms, questionnaires were developed by researcher herself based on literature review.<sup>9,13</sup> Internal consistency of instrument was established by Cronbach's alpha. A value of Cronbach's alpha for Depression, anxiety and stress was 0.77, 0.80 and 0.82 respectively.<sup>14</sup> Data was collected using structured, online self-reported questionnaires both in English and Nepali version. Nepali version of DASS-21 is already validated tool by Tonsing KN, 2014.<sup>15</sup> To assess the reliability of the DASS-21-N, Cronbach's alphas were calculated for the three subscales. The internal consistency was 0.77 for DASS-D, 0.80 for DASS-A, and 0.82 for DASS-S which indicates good Cronbach's alpha values.

Ethical approval was obtained from Institutional Review Committee of Kathmandu University School of Medical Sciences (IRC - KUSMS) before data collection. The objective of the study was explained to participants through online along with attached consent on Google form with the continuation of questionnaire. Confidentiality and

anonymity was maintained by not including the name, email address nor mentioning any other identification or any contact number in questionnaire forms.

The data were processed using the Statistical Package for Social Science (SPSS version 20). The data were analyzed using descriptive statistics such as frequency, percentage, and median. Chi-square test where used to find out the association between dependent and independent variables and  $p < 0.05$  were taken as significant. In addition, multivariate logistic analysis was carried out to assess the effects of each independent variable on the outcome variable.

## RESULTS

Among 408 healthcare workers, majority 318 (77.9%) belonged to the age group 20-30 years, with median age of 26 years. Most of the participants 307 (75.2%) were female and more than half of the participants 265 (65%) were unmarried. Nurses comprised of 213 (52.2%) of the study population followed by doctors 124 (30.4%) and paramedics 71 (17.4%). Majority of the healthcare workers 371 (90.9%) had no comorbidities (Table 1).

**Table 1. Socio-demographic characteristics and comorbidity of healthcare workers (n=408)**

| Characteristics                | Number | Percentage |
|--------------------------------|--------|------------|
| <b>Age group (years)</b>       |        |            |
| 20-30                          | 318    | 77.9       |
| 31-40                          | 74     | 18.1       |
| 41-60                          | 16     | 4          |
| Median age=26                  |        |            |
| <b>Gender</b>                  |        |            |
| Female                         | 307    | 75.2       |
| Male                           | 101    | 24.8       |
| <b>Marital Status</b>          |        |            |
| Married                        | 143    | 35         |
| Unmarried                      | 265    | 65         |
| <b>Occupation</b>              |        |            |
| Doctor                         | 124    | 30.4       |
| Nurse                          | 213    | 52.2       |
| Paramedics                     | 71     | 17.4       |
| <b>Presence of comorbidity</b> |        |            |
| Yes                            | 37     | 9.1        |
| No                             | 371    | 90.9       |

Among the health workers, 47.5% of them had anxiety, 33.4% had depression and 23% had stress respectively. Among them, 18.4% had moderate to extremely severe depression, 37% had moderate to extremely severe anxiety, 11.5% had moderate to extremely severe stress (Table 2).

According to prevalence of physical symptoms among healthcare workers the commonest reported symptoms

**Table 2. Prevalence of Depression, Anxiety and Stress among healthcare workers (n=408)**

| Level            | Psychological Problems |            |            |
|------------------|------------------------|------------|------------|
|                  | Depression             | Anxiety    | Stress     |
|                  | Number (%)             | Number (%) | Number (%) |
| Normal           | 272 (66.6)             | 214 (52.5) | 314 (77)   |
| Mild             | 61 (15)                | 43 (10.5)  | 47 (11.5)  |
| Moderate         | 50 (12.3)              | 101 (24.7) | 27 (6.6)   |
| Severe           | 20 (4.9)               | 26 (6.4)   | 19 (4.7)   |
| Extremely severe | 5 (1.2)                | 24 (5.9)   | 1 (0.2)    |

were lethargy (56.1%), headache (49.8%), joint/muscle pain (40.7%), insomnia (34.6%) and poor appetite (32.8%). Among the healthcare workers, 23.8% did not report any symptom within the preceding one month whereas 11.5% reported one symptom, 8.3% reported two symptoms, 13% reported three symptoms and 43.4% reported four or more symptoms (Table 3).

**Table 3. Prevalence of physical symptoms among healthcare workers\***

| Physical symptoms                                   | Yes        | No         |
|---|------------|------------|
|   | Number (%) | Number (%) |
| Persistent fever (> 38 degree C for at least 1 day) | 38 (9.3)   | 370 (90.7) |
| Nausea/Vomiting                                     | 74 (18.1)  | 334 (81.9) |
| Insomnia  | 141 (34.6) | 267 (65.4) |
| Poor appetite                                       | 134 (32.8) | 274 (67.2) |
| Headache  | 203 (49.8) | 205 (50.2) |
| Neck stiffness                                      | 64 (15.7)  | 344 (84.3) |
| Cough   | 113 (27.7) | 295 (72.3) |
| Sore throat   | 122 (29.9) | 286 (70.1) |
| Breathing difficulty                                | 53 (13)    | 355 (87)   |
| Joint/muscle pain                                   | 166 (40.7) | 242 (59.3) |
| Rashes  | 21 (5.1)   | 387 (94.9) |
| Lethargy/tiredness                                  | 229 (56.1) | 179 (43.9) |
| Itching   | 33 (8.1)   | 375 (91.9) |
| Watery eyes   | 62 (15.2)  | 346 (84.8) |

\*Multiple response

Bivariate analysis shows that age and gender of healthcare workers are significantly associated with all three psychological problems of DASS-21 (depression, anxiety and stress) whereas marital status is significantly associated with anxiety ( $p < 0.001$ ). No association was found between occupation and psychological problems (Table 4). Presence of co-morbidity is significantly associated with anxiety ( $p=0.027$ ) (Table 5). Age, gender and marital status were found to be significantly associated with physical symptoms present in health workers in the past one month ( $p < 0.001$ ,  $p = 0.031$ ,  $p < 0.001$ ) respectively whereas, no association was found with occupation and presence of co-morbidity with physical symptoms (Table 6). Presence

**Table 4.** Association of socio-demographic characteristics of health workers with depression, anxiety and stress

(n=408)

| Characteristics   |              |            | Psychological problems |              |            |         |              |            |            |         |         |
|-------------------|--------------|------------|------------------------|--------------|------------|---------|--------------|------------|------------|---------|---------|
|                   |              |            | Depression             |              | p-value    | Anxiety |              | p-value    | Stress     |         | p-value |
| Age group (years) | Yes<br>n (%) | No<br>n(%) |                        | Yes<br>n (%) | No<br>n(%) |         | Yes<br>n (%) | No<br>n(%) |            |         |         |
| 20-30             | 113 (35.5)   | 205 (64.5) | 0.041*                 | 168 (52.8)   | 150(47.2)  |         | <0.001*      | 84 (26.4)  | 234 (73.6) | 0.005*  |         |
| 31-40             | 22 (29.7)    | 52 (70.3)  |                        | 24 (32.4)    | 50 (67.6)  |         |              | 10 (13.5)  | 64 (86.5)  |         |         |
| 41-60             | 1 (6.2)      | 15 (93.8)  |                        | 2 (12.5)     | 14 (87.5)  |         |              | 0          | 16 (100)   |         |         |
| Gender            |              |            |                        |              |            |         |              |            |            |         |         |
| Female            | 118 (38.4)   | 189 (61.6) | <0.001*                | 167 (54.4)   | 140 (45.6) |         | <0.001*      | 85 (27.7)  | 222 (72.3) | <0.001* |         |
| Male              | 18 (17.8)    | 83 (82.2)  |                        | 27 (26.7)    | 74 (73.3)  |         |              | 9 (8.9)    | 92 (91.1)  |         |         |
| Marital Status    |              |            |                        |              |            |         |              |            |            |         |         |
| Married           | 39 (27.3)    | 104 (72.7) | 0.056                  | 42 (29.4)    | 101 (70.6) |         | <0.001*      | 27 (18.9)  | 116 (81.1) | 0.143   |         |
| Unmarried         | 97 (36.6)    | 168 (63.4) |                        | 152 (57.4)   | 113 (42.6) |         |              | 67 (25.3)  | 198 (74.7) |         |         |
| Occupation        |              |            |                        |              |            |         |              |            |            |         |         |
| Doctor            | 32 (25.8)    | 92 (74.2)  | 0.099                  | 57 (46)      | 67 (54)    |         | 0.862        | 23 (18.5)  | 101 (81.5) | 0.362   |         |
| Nurse             | 77 (36.2)    | 136 (63.8) |                        | 104 (48.8)   | 109 (51.2) |         |              | 53 (24.9)  | 160 (75.1) |         |         |
| Paramedics        | 27 (38)      | 44 (62)    |                        | 33 (46.5)    | 38 (53.5)  |         |              | 18 (25.4)  | 53 (74.6)  |         |         |

\*Statistically significant (p &lt; 0.05) at 95% CI

**Table 5.** Association of co-morbidity of health workers with depression, anxiety and stress

(n=408)

| Presence of<br>co-morbidity | Psychological problems |        |     |        |         |         |        |     |        |         |        |        |         |        |       |
|-----------------------------|------------------------|--------|-----|--------|---------|---------|--------|-----|--------|---------|--------|--------|---------|--------|-------|
|                             | Depression             |        |     |        | p-value | Anxiety |        |     |        | p-value | Stress |        | p-value |        |       |
|                             | Yes                    | n (%)  | No  | n(%)   |         | Yes     | n (%)  | No  | n(%)   |         | Yes    | n (%)  | No      | n(%)   |       |
| No                          | 121                    | (32.6) | 250 | (67.4) | 0.329   | 170     | (45.8) | 201 | (54.2) | 0.027*  | 83     | (22.4) | 288     | (77.6) | 0.311 |
| Yes                         | 15                     | (40.5) | 22  | (59.5) |         | 24      | (64.9) | 13  | (35.1) |         | 11     | (29.7) | 26      | (70.3) |       |

\*Statistically significant (p &lt; 0.05) at 95% CI

**Table 6.** Association between socio-demographic characteristics of health workers and physical symptoms

(n=408)

| Characteristics         | Physical symptoms |           |             | p-value |
|-------------------------|-------------------|-----------|-------------|---------|
|                         | Yes n (%)         | No n (%)  | Total n (%) |         |
| Age group (years)       |                   |           |             |         |
| 20-30                   | 256 (80.5)        | 62 (19.5) | 318 (100)   | <0.001* |
| 31-40                   | 48 (64.9)         | 26 (35.1) | 74 (100)    |         |
| 41-60                   | 7 (43.8)          | 9 (56.2)  | 16 (100)    |         |
| Gender                  |                   |           |             |         |
| Female                  | 242 (78.8)        | 65 (21.2) | 307 (100)   | 0.031*  |
| Male                    | 69 (68.3)         | 32 (31.7) | 101 (100)   |         |
| Marital Status          |                   |           |             |         |
| Married                 | 95 (66.4)         | 48 (33.6) | 143 (100)   | 0.001*  |
| Unmarried               | 216 (81.5)        | 49 (18.5) | 265 (100)   |         |
| Occupation              |                   |           |             |         |
| Doctor                  | 90 (72.6)         | 34 (27.4) | 124 (100)   | 0.400   |
| Nurse                   | 168 (78.9)        | 45 (21.1) | 213 (100)   |         |
| Paramedics              | 53 (74.6)         | 18 (25.4) | 71 (100)    |         |
| Presence of comorbidity |                   |           |             |         |
| No                      | 283 (76.3)        | 88 (23.7) | 371 (100)   | 0.934   |
| Yes                     | 28 (75.7)         | 9 (24.3)  | 37 (100)    |         |

\*Statistically significant (p&lt;0.05) at 95% CI

**Table 7.** Association between physical symptoms and depression, anxiety and stress

(n=408)

| Physical symptoms | Psychological problems |            |         |              |            |         |              |            |         |
|-------------------|------------------------|------------|---------|--------------|------------|---------|--------------|------------|---------|
|                   | Depression             |            | p-value | Anxiety      |            | p-value | Stress       |            | p-value |
|                   | Yes<br>n (%)           | No<br>n(%) |         | Yes<br>n (%) | No<br>n(%) |         | Yes<br>n (%) | No<br>n(%) |         |
| Yes               | 121 (38.9)             | 190 (61.1) | <0.001* | 175 (56.3)   | 136 (43.7) | <0.001* | 91 (29.3)    | 220 (70.7) | <0.001* |
| No                | 15 (15.5)              | 82 (84.5)  |         | 19 (19.6)    | 78 (80.4)  |         | 3 (3.1)      | 94 (96.9)  |         |

\*Statistically significant (p&lt;0.05) at 95% CI

**Table 8.** Relationship of socio-demographic characteristics, co-morbidity and physical symptoms of health workers with depression, anxiety and stress

(n=408)

| Physical symptoms                    | Psychological problems |             |         |         |              |         |        |              |         |
|--------------------------------------|------------------------|-------------|---------|---------|--------------|---------|--------|--------------|---------|
|                                      | Depression             |             |         | Anxiety |              |         | Stress |              |         |
|                                      | AOR                    | 95% CI      | p-value | AOR     | 95% CI       | p-value | AOR    | 95% CI       | p-value |
| <b>Age group (years)</b>             |                        |             |         |         |              |         |        |              |         |
| 20-30                                | Ref                    |             |         |         |              |         |        |              |         |
| 31-40                                | 1.047                  | 0.515-2.130 | 0.898   | 0.828   | 0.390-1.758  | 0.623   | 0.421  | 0.175-1.009  | 0.052   |
| 41-60                                | 0.159                  | 0.018-1.373 | 0.095   | 0.199   | 0.033-1.218  | 0.081   | 0.000  | 0.000        | 0.998   |
| <b>Gender</b>                        |                        |             |         |         |              |         |        |              |         |
| Male                                 | Ref                    |             |         |         |              |         |        |              |         |
| Female                               | 2.979                  | 1.498-5.924 | 0.002*  | 5.696   | 2.820-11.507 | <0.001* | 4.915  | 2.041-11.832 | <0.001* |
| <b>Marital Status</b>                |                        |             |         |         |              |         |        |              |         |
| Married                              | Ref                    |             |         |         |              |         |        |              |         |
| Unmarried                            | 1.414                  | 0.789-2.535 | 0.244   | 2.960   | 1.614-5.429  | <0.001* | 0.809  | 0.424-1.542  | 0.519   |
| <b>Occupation</b>                    |                        |             |         |         |              |         |        |              |         |
| Doctor                               | Ref                    |             |         |         |              |         |        |              |         |
| Nurse                                | 0.991                  | 0.531-1.850 | 0.977   | 0.512   | 0.262-1.0    | 0.05*   | 0.618  | 0.302-1.265  | 0.188   |
| Paramedics                           | 1.664                  | 0.805-3.437 | 0.169   | 1.131   | 0.513-2.494  | 0.760   | 1.054  | 0.446-2.488  | 0.905   |
| <b>Presence of comorbidity</b>       |                        |             |         |         |              |         |        |              |         |
| No                                   | Ref                    |             |         |         |              |         |        |              |         |
| Yes                                  | 1.851                  | 0.848-4.044 | 0.122   | 5.208   | 2.001-13.552 | 0.001*  | 2.329  | 0.979-5.538  | 0.056   |
| <b>Presence of physical symptoms</b> |                        |             |         |         |              |         |        |              |         |
| No                                   | Ref                    |             |         |         |              |         |        |              |         |
| Yes                                  | 2.912                  | 1.574-5.385 | 0.001*  | 4.844   | 2.657-8.831  | <0.001* | 11.223 | 3.406-36.978 | <0.001* |

of physical symptoms was significantly associated with all psychological problems of DASS-21 ( $p < 0.001$ ) (Table 7).

The multivariate analysis where after adjusting for the effects of confounders, female healthcare workers were around three times more likely to have depression (AOR=2.97, 95% CI=1.49-5.92), five times more likely to have anxiety (AOR=5.69, 95% CI=2.82-11.50) and stress (AOR=4.91, 95% CI=2.04-11.83) than male healthcare workers. Unmarried health workers were around three times more likely to have anxiety than married healthcare workers (AOR=2.96, 95% CI=1.61-5.42). Nurses were at lesser odds of having anxiety compared to doctors (AOR=0.51, 95% CI=0.26-1.0). The healthcare workers who had any kind of comorbidity were five times more likely to have anxiety than those who did not have (AOR=5.2, 95% CI=2.0-13.55). The healthcare workers who had any

physical symptoms were at three times greater odds of having depression (AOR=2.91, 95% CI=1.57-5.38), nearly five times greater odds of having anxiety and 11 times greater odds of having stress (AOR=11.22, 95% CI=3.40-36.97) than those with no any physical symptoms (Table 8).

## DISCUSSION

The present study was a quantitative, cross-sectional study aimed to "assess psychological problems and associated physical symptoms among healthcare workers of Dhulikhel hospital during COVID-19 pandemic" by using DASS -21 questionnaire for assessing psychological problems and self -constructed questionnaire for physical symptoms via self-administer questionnaire. The study population consist 408 healthcare workers.



### Prevalence of Depression, Anxiety and Stress among healthcare workers

The current study shows one third of healthcare workers 33.4% had depression among them 18.4% had moderate to extremely severe depression. Similar to the findings done in West Bengal, India (2020) concluded that one third of healthcare workers 34.9% were depressed among which 24.3% had mild to extremely severe level of depression.<sup>16</sup> Likewise the finding of another study also support where healthcare workers had depression among which 12.82% had moderate to severe depression.<sup>17</sup> The recent findings are consistent with another similar finding of the study as one third of participant's had significant psychological impact.<sup>13</sup> This may be due concern about own health, fear of spread of virus, causing transmission to their family and fellow healthcare workers, more chance of being isolated and that people avoid them because of the risk of disease transmission.<sup>18</sup> The current study is inconsistent with study conducted by Chew et al. in Singapore and India show that only 5.3% of health works had moderate to very severe depression.<sup>9</sup> The possible reason for this study could be that majority of the healthcare workers were of age group 20-30 years, in this age there is higher acceptance of risk and lower coping skills.

The present study shows nearly half of healthcare workers 47.5% had anxiety among which 37% had moderate to extremely severe anxiety. The recent findings are consistent with another finding of the study as 44.6% of participants reported symptoms of anxiety.<sup>18</sup> A study conducted in China shows nearly half 46.04% had anxiety which is consistent with the present study.<sup>17</sup> Sharp contrast with present study, conducted in India and Singapore revealed that 8.7% participants had moderate to extreme severe anxiety.<sup>9</sup> This could be due to sample size and study population as healthcare workers are directly or indirectly exposed in caring the patients with COVID-19.

The current study shows nearly one fourth of participants 23% had stress among them 22.8% had mild to severe stress. The recent findings are consistent with another similar finding of the study done by Chatterjee et al. in India, where participants reported mild to severe stress.<sup>16</sup> Though this study did not assess working hours of healthcare professional, they were given 6-12 hours shift duty another, study was done at early phase of the pandemic as time pass they were quarantine which results higher duty hours on other healthcare worker, which effect overall mental health. Study conducted in Trinidad and Tobago reported that 17.97% of healthcare workers were stressed as health professional those involve in caring for the patients with COVID-19 has fear of being infected with COVID-19.<sup>19</sup> The study done in Saudi Arabia by Surrati et al. shows 72.8% for moderate stress which is inconsistent with present study.<sup>20</sup>

The present study found that prevalence of physical symptoms, nearly half of the participants 43.4% reported

four or more symptoms among which commonest symptoms were lethargy, headache, joint/muscle pain, insomnia and poor appetite. The recent findings are consistent with another similar study done in India, Singapore and China where 33.4% reported more than four physical symptoms in which 34.0% reported insomnia where headache was the commonly reported symptom.<sup>9,13,18</sup> In contrast to the other study 60.81% reported no physical symptoms.<sup>21</sup> This could have been due to psychological distress of the pandemic which have contributed to physical symptoms.

In this study, age group of 20-30 and female healthcare workers are significantly associated with all three psychological problems ( $p < 0.05$ ) and marital status and presence of co-morbidity is statistically significant with anxiety ( $p < 0.05$ ). However, occupation had no any association with psychological problems. The study conducted in china reveal that women reported more severe symptom of depression, anxiety, insomnia, and distress.<sup>18</sup> Similar finding was observed in Trinidad and Tobago, conclude that female and age group of 30 and below were significantly associated with higher level of anxiety whereas age group of 30 and below were significantly associated with depression ( $p < 0.05$ ) which is consistent with the present study. It is well known that females have a tendency to feel more responsible not only caring for themselves but also maintaining the health of their families including spouse, children, parents and in-laws because of which they are more prone to develop psychological distress and if family, spouse and colleagues provide adequate psychosocial support then it would be a protective factor for the psychological well-being.<sup>19,22-24</sup> In contrast to the study nursing staff showed higher level of anxiety.<sup>25</sup>

This study revealed statistical significant association between physical symptoms with all psychological problems (depression, anxiety and stress). Previous studies shows that COVID-19 pandemic proved that healthcare workers with physical symptoms were more likely to have a positive screening for depression  $p < 0.001$ , anxiety  $p < 0.001$  and stress  $p = 0.002$ .<sup>9</sup>

Likewise the study done by Wang et al. in China also support that specific physical symptoms e.g cough, chills, dizziness and sore throat were significantly associated with greater psychological impact and higher level of depression, anxiety and stress ( $p < 0.05$ ).<sup>21</sup> A study conducted in India reported that there was no statistically significant association between the physical symptoms such as cough, cold, headache, sore throat, myalgia, fever and breathing difficulty which is in contrast with present study.<sup>13</sup>

Multivariate logistic regression showed that female healthcare workers were at high risk for depression, anxiety and stress than male healthcare workers. Likewise, unmarried and having any kind of co-morbidity was associated with anxiety. In addition, presence of physical symptoms in preceding one month was associated with

depression, anxiety and stress. These findings are consistent with study conducted in china and Russia by Lai et al. and Mosolova et al. where female and nurses were significantly associated with depression, anxiety, and distress.<sup>18,23</sup> Study of Devkota et al. done in Nepal reported that Gender and marital status showed positive association with anxiety which is consistent with current study.<sup>22</sup> Another similar study done between India and Singapore by Chew et al. concluded that psychological outcomes depression, anxiety and stress remained significantly associated with the presence of physical symptoms experienced in the preceding month.<sup>9</sup> The increased prevalence of physical symptoms tend to have been contributed by the psychological impact of the pandemic. Another contributing factor could be the social stigma associated with mental health issues, which may have resulted in having a higher tendency to express their psychological problems through physical symptoms.<sup>26</sup> In contrast to this study, a study from Nepal evident that nurses had higher odds of having anxiety symptoms than other health workers while doctors had lower odds of experiencing symptoms of depression than other health workers.<sup>27</sup>

The possible limitation of the study includes firstly, only healthcare workers of Dhulikhel Hospital has been undertaken in this study thus the findings may not be generalized to the entire healthcare workers. Secondly, this study found strong association between presence of physical symptoms and psychological problems then also

we are unable to determine that psychological problems had resulted in the manifestation of the physical symptoms. Despite limitations, this study provides findings related to psychological problems and physical symptoms during the COVID-19 outbreak among healthcare workers and help to improve understanding how pandemic influence psychological well-being of them.

## CONCLUSION

The findings of the study show one third of healthcare worker had depression, nearly half had anxiety and nearly one fourth had stress where nearly half of them reported four or more physical symptoms. Similarly, there is a significant association between the prevalence of physical symptoms and psychological problems. The finding might help healthcare institute for planning effective strategies like mental health assessment and psychosocial counselling to improve mental health of healthcare workers and it might also help future researcher to conduct further studies on future pandemic.

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# Compliance of Surgical Hand Scrub in Operation Theatre among Surgical Team Members at Tertiary Level Hospital, Nepal

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## ABSTRACT

### Background

Surgical hand scrub is an important part of practice that provides basic prevention and control of transmission of pathogenic microorganisms. It should be performed either by scrubbing with a suitable antimicrobial soap and water or by using suitable alcohol-based hand rub before donning any sterile attire.

### Objective

To assess the compliance of surgical hand scrub and its association with socio-demographic variables among surgical team members in operation theater at Dhulikhel hospital.

### Method

A quantitative and cross-sectional observational study was conducted using WHO standard checklist to assess the compliance. Purposive sampling technique was used to collect data. The checklist consisted of 26 statements related to the compliance of surgical hand scrub and compliance was measured by calculating percentage of the total score. Chi-square test was done to analyze the association between variables.

### Result

Among 119 surgical team members, 71% of the them had a good level of compliance regarding surgical hand scrub. Some gaps were identified; many participants didn't lather well to 2 inches above elbow and some didn't dip the fingertips in the hand rub to decontaminate under the nails. The compliance of surgical hand scrub was statistically significant with level of education, years of work experience and attendance of previous training of surgical hand scrub.

### Conclusion

Surgical team members followed the steps for surgical hand scrub in general but showed non-compliance with a few steps. Knowledge of the surgical team members should be updated in the orientation process and provide subsequent in-service trainings which is in line with the WHO surgical hand scrub guidelines.

## KEY WORDS

*Alcohol-based hand rub, Compliance, Dhulikhel hospital, Operation theatre, Surgical hand scrub*

## INTRODUCTION

The surgical hand scrub (SHS) is the process of washing and scrubbing of hands and forearms by use of a disinfectant.<sup>1</sup> It is an important part of practice in order to eradicate the transient flora and eliminate the resident flora.<sup>2</sup>

According to WHO global guidelines for prevention of surgical site infection (SSI), SHS should be performed either by scrubbing with a suitable antimicrobial soap and water or using a suitable alcohol-based hand rub (ABHR) before donning sterile gloves.<sup>2</sup> Skin is one of the most important sources of microbial contamination and can be easily spread from the hands of health care providers.<sup>3</sup> The use of sterile gloves during surgery does not remove the necessity of SHS before surgery because microorganisms can be transmitted through the surgical field as a result of perforations in the glove during surgery.<sup>4</sup>

Globally, SSI range from 2.5-41.9% with significantly higher rate in developing countries.<sup>5</sup> In Nepal, SSI was reported about 2.6% in 2016, 4% among 92,41,979 cases in 2017 and 2.7% in 2018 at tertiary level hospital.<sup>6-8</sup> Compliance with the standard SHS was 13% among surgical team members in Chitwan district of Nepal in 2018.<sup>9</sup> No such study has been conducted in the current setting so the researcher conducted this study with the aim to assess the compliance of SHS and its association with selected socio-demographic variables among surgical team members in operation theatre at Dhulikhel hospital. This could help to improve practice and focus on importance to invest in continuing education programs, human resources training and in new scientific research.

## METHODS

This descriptive cross-sectional study was conducted in operation theatre at Dhulikhel Hospital, Kathmandu University Hospital from 8<sup>th</sup> to 26<sup>th</sup> November 2021.

Data was collected from all the surgical team members (Surgeon, nurses, residents, medical officers) working at operation theater who were available at the time of study. Purposive sampling technique was used for the study. A predesigned questionnaire was used to collect information on demographic and observational checklist was used to observe the compliance of SHS practice among surgical team members. The checklist was based on WHO standard checklist for SHS practice.<sup>4</sup> The checklist consisted of 26 statements which included alcohol-based hand rub (ABHR) related to procedure steps, pre-requisites, scrub process domain and scrub time. Total score was 26. Scoring for each statement was given either '1' for each done (yes) step or '0' if not done (no) step. Level of compliance was measured by calculating the total score in terms of percentage. The compliance was considered "good" if the score was  $\geq 90\%$  without missing critical steps and considered "poor" if the score was  $< 90\%$  with or without missing critical steps.<sup>9</sup>

We used direct observation to assess the compliance of SHS practice. We attempted to minimize the bias arising from the use of direct observations, i.e. Hawthorne effect: to minimize the change in the observed personnel's behavior due to awareness about being observed. The participants were not informed about the observation and consent to conduct the study was obtained from the administrative director and nursing supervisor of operation theatre. All observations were carried out by same trained personnel and supervised by the principal investigator which minimize variations in the results due to differences in observer practices.

Data was coded, entered in and analyzed in Statistical Package for Social Science (SPSS) version 20. Descriptive statistics including mean, frequency, standard deviation and percentage were used to analyze the data. Chi-square test was used to find the association of compliance of SHS with selected socio-demographic variables ( $p\text{-value} < 0.001$  was considered statistically significant finding). Approval from the Institutional Review Committee (IRC), Kathmandu University School of Medical Sciences (KUSMS) was obtained to conduct the study (149/2021).

## RESULTS

During the study period, data was collected from 119 surgical team members. There were around 130 surgical team members working in operating theatre however, researcher could observe only 119 participants during the study period and purposive sampling technique was used to observe compliance on SHS. More than half of them were female. The higher number of participants i.e. 46 (39%) had master's degree education, 39 (33%) had bachelor degree and 34 (28%) had certificate level education. Likewise, the majority of the participants (39%) were surgeons, whereas 34 (28%) were nurses, 26 (22%) were surgical residents and 13 (11%) were medical officers. More than two third of the participants (73.1%) had work experiences of 2-5 years. Similarly, less than half of the participants (43%) had obtained training related to SHS.

All the surgical team members performed the steps prior to the SHS correctly such as, a. donning theatre clothing, b. ensuring the set-up of sterile gloves, gown and towel for the use after scrub, c. fingernail polish removed and d. artificial nails, jewelries were removed. All of them used ABHR with Chlorhexidine Gluconate IP 2.5% with Ethyl Alcohol IP 70% and completed the scrub within 2-3 minutes (Table 1).

Some participants missed the procedure steps during SHS. Forty percentage of the participants didn't lather well to 2 inches above elbow, 38% didn't dip the fingertips in the hand rub to decontaminate under the nails, 23% missed in between steps of smearing the hand rub on the left forearm up to the elbow correctly and 13% didn't put approximately 5 ml (3 doses) of ABHR in the palm of right hand. Similarly,

9% of the participants touched the sink while performing SHS (Table 1).

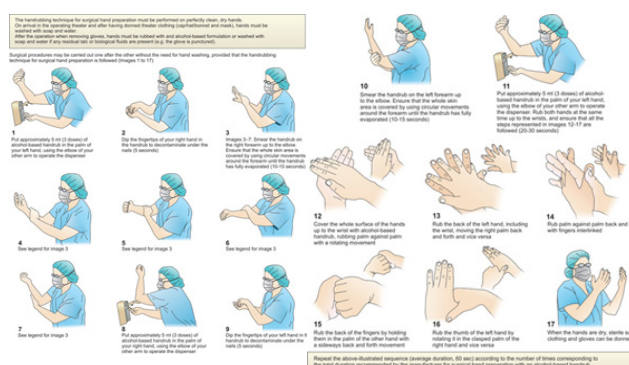
**Table 1. Surgical Hand Scrub procedure among the surgical team members in operation theatre. (n=119)**

| Surgical Hand Scrub Procedure Steps  |  | Performed activities |           |
|--------------------------------------|--|----------------------|-----------|
|                                      |  | Yes (%)              | No (%)    |
| <b>Items of procedure steps</b>      |  |                      |           |
| 1.                                   | Don theater clothing? (Including cap and mask)   | 119 (100)            | 0         |
| 2.                                   | Ensure the set-up of sterile gloves, gown, and towel for the use after scrub.  | 119 (100)            | 0         |
| 3.                                   | Follows agency policy for type of cleansing agent used.  | 119 (100)            | 0         |
| 4.                                   | Fingernail polish removed *  | 119 (100)            | 0         |
| 5.                                   | Removed artificial nails, jewelries (ring, bracelet) *   | 119 (100)            | 0         |
| <b>Items of Scrub Pre-requisites</b> |  |                      |           |
| 1.                                   | Turns on water using sensor  | 119 (100)            | 0         |
| 2.                                   | Wets hands and forearms from elbows to fingertips  | 117 (98.3)           | 2 (1.7)   |
| 3.                                   | Keeps hands above elbows and away from body  | 115 (96.6)           | 4 (3.4)   |
| 4.                                   | Lathers well to 2 inches above the elbow   | 71 (59.7)            | 48 (40.3) |
| 5.                                   | Does not touch inside of sink  | 108 (90.8)           | 11 (9.2)  |
| 6.                                   | Grasp the towel and dry one hand from fingertip to elbow   | 119 (100)            | 0         |
| 7.                                   | Use opposite side of towel to dry another hand from fingertip to elbow   | 119 (100)            | 0         |
| <b>Items of Scrub Process</b>        |  |                      |           |
| 1.                                   | Put approximately 5ml (3 doses) of AHBR in the palm of left hand using the elbow of another arm to operate the dispenser   | 114 (95.8)           | 5 (4.2)   |
| 2.                                   | Dip the fingertips of right hand in the hand rub to decontaminate under the nails (5 seconds)  | 74 (62.2)            | 45 (37.8) |
| 3.                                   | Smear the hand rub on the right forearm up to the elbow. Ensure that the whole skin area is covered by using circular movements around the forearm until the hand rub has fully evaporated (10-15 seconds) | 115 (96.6)           | 4 (3.4)   |
| 4.                                   | Put approximately 5ml (3 doses) of AHBR in the palm of right hand using the elbow of another arm to operate the dispenser  | 103 (86.6)           | 16 (13.4) |
| 5.                                   | Smear the hand rub on the left forearm up to the elbow. Ensure that the whole skin area is covered by using circular movements around the forearm until the hand rub has fully evaporated (10-15 seconds)  | 92 (77.3)            | 27 (22.7) |
| 6.                                   | Put approximately 5ml (3 doses) of ABHR in the palm of left hand, to rub both hands at the same time up to the wrists  | 118 (99.2)           | 1 (0.8)   |

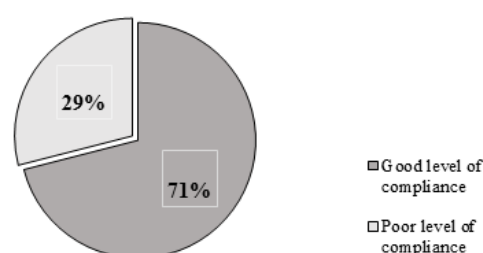
|     |  |           |   |
|-----|--|-----------|---|
| 7.  | Cover the whole surface of the hands up to the wrist with AHBR, rubbing palm against palm with a rotating movement | 119 (100) | 0 |
| 8.  | Rub the back of the left hand, including the wrist, moving the right palm back and forth, and vice-versa           | 119 (100) | 0 |
| 9.  | Rub palm against palm back and forth with fingers interlinked  | 119 (100) | 0 |
| 10. | Rub the back of the fingers by holding them in the palm of the other hand with a sideways back and forth movement  | 119 (100) | 0 |
| 11. | Rub the thumb of the left hand by rotating it in the clasped palm of the right hand and vice versa                 | 119 (100) | 0 |
| 12. | Repeat the above sequence 2 - 3 times, let hands dry*  | 119 (100) | 0 |
| 13. | Hold the hands above the elbow at all the times, before proceeding surgery*  | 119 (100) | 0 |

#### Scrub time

|   |           |   |
|---|-----------|---|
| Complete the scrub of within 2-3 minutes* | 119 (100) | 0 |
|---|-----------|---|



**Fig. 1. WHO recommendations for Alcohol-based hand rub (ABHR) technique/surgical hand preparation technique**



**Fig. 2. Level of Compliance on Surgical Hand Scrub among the surgical team members**

Figure 2 represented that 84 (71%) participants had good level of compliance whereas 35 (29%) participants had poor level of compliance for SHS.

Table 2 showed that there was a statistically significant association between compliance of SHS practices and level of education and attendance of previous training on SHS ( $p$ -value < 0.001). However, there was no association between compliance of SHS and job discipline ( $p$  = 0.898) and year of work experience ( $p$  = 0.015).

**Table 2.** Compliance of surgical hand scrub with selected demographic variable among the surgical team members

| (n=119)  |                |   |   |             |
|--|----------------|---|---|-------------|
| Variable   | Total<br>f (%) | Good level<br>of compli-<br>ance<br>f (%) | Poor level<br>of compli-<br>ance<br>f (%) | p-<br>value |
| <b>Level of education</b>                              |                |   |   | <0.001      |
| Certificate  | 34 (28.6)      | 23 (67.6%)                                | 11 (32.4%)                                |             |
| Bachelor   | 39 (32.8)      | 21 (53.8%)                                | 18 (46.2%)                                |             |
| Master's degree  | 46 (38.6)      | 41 (89.1%)                                | 5 (10.9%)                                 |             |
| <b>Job discipline</b>                                  |                |   |   | 0.898       |
| Doctor   | 85 (71.4)      | 61 (71.8%)                                | 24 (28.2%)                                |             |
| Nurse  | 34 (28.6)      | 24 (70.6%)                                | 10 (29.4%)                                |             |
| <b>Years of work<br/>experience</b>                    |                |   |   | 0.015       |
| ≤3 year  | 78 (65.6)      | 50 (64.1%)                                | 28 (35.9%)                                |             |
| >3 year  | 41 (34.4)      | 35 (85.4%)                                | 6 (14.6%)                                 |             |
| <b>Attendance of<br/>previous trainings<br/>of SHS</b> |                |   |   | <0.001      |
| Yes  | 51 (42.9)      | 46 (90.2%)                                | 5 (9.8%)                                  |             |
| No   | 68 (51.1)      | 39 (57.4%)                                | 29 (42.6%)                                |             |

## DISCUSSION

This is the first study to assess the compliance on SHS practices among surgical team members in accordance with standard guidelines based on WHO. Our study showed that more than 2/3<sup>rd</sup> participants (71%) had good level of compliance on SHS practices. This is considered a high compliance rate compared to the 13% reported in a study conducted by Poudel et al. in Chitwan district of Nepal.<sup>9</sup> This might be due to different time frame in the study where the participants were observed in morning and evening shift and the time frame of first scrub was 5 minutes and second scrub was 3 minutes whereas our scrub time frame was 2-3 minutes. The high rate of compliance observed in our study can be explained by the fact that the guidelines were adapted, more accessible to users (displayed on the computers screen saver in the operation theatre), and took into consideration available soaps and disinfectants and the skills of the surgical team members. Several other international studies have reported even higher rate of compliance on SHS.<sup>10,11</sup>

In the present study, we found that all team members performed the steps prior to the SHS correctly such as donning theatre clothing, ensuring set-up of sterile goods for the use after scrub, fingernail polish removed and artificial nails, jewellerys were also removed. Similar findings of the study conducted in Turkey, where all the doctors and nurses removed their accessories before performing surgery and did not wear artificial nails.<sup>11</sup> All surgical team members used ABHR with Chlorhexidine Gluconate IP 2.5% with Ethyl Alcohol IP 70% and completed the scrub within 2-3 minutes in this study. World health organization recommends ABHR before donning sterile gloves when performing surgical procedures if quality and quantity of water is not assured in the operating

theatre.<sup>4</sup> A systematic literature review also concluded that ABHR is more effective than a 6-minute SHS using 4% chlorhexidine gluconate in terms of microbial counts on hands immediately after scrubbing.<sup>12</sup>

Many participants missed the step of lathering well to 2 inches above elbow, the step of dipping the fingertips of the right hand in the hand rub to decontaminate under the nail for 5 seconds and the step to smear the hand rub on the left forearm up to the elbow correctly in this study. This finding is in line with the several other studies which reported remarkable shortcomings in the fulfilment of SHS in terms of time and of technique.<sup>9,13</sup> Another study concluded that health care workers follow the steps for surgical hand washing in general but show non-compliance with only some steps such as in keeping nails short, using appropriate amount of antiseptic and keeping their hands elevated. Similarly, many of them splashed water during SHS.<sup>11</sup>

Level of education of the participants was significantly associated with compliance of SHS. Similarly, almost 90% of the participants with master's degree had good compliance of SHS. This finding was inconsistent with other previous studies conducted on Turkey and South Korea.<sup>11,14</sup>

In the present study, there was no significant association between compliance of SHS and job discipline. Our results are not in line with the findings of the study that reported doctor status and male sex are risk factors for poor adherence to recommended hand hygiene practices.<sup>13</sup> A similar study concluded that nurses were found to do a thorough SHS in comparison to the resident doctors who were found to neglect SHS.<sup>14</sup> This could be related to the findings reported by Chen et al. that is, the nurses are present all the time in the theatre and perform a SHS as often as 10-15 times per week, whereas, surgeons enter the operating room one-to-three times per week then it is obvious that the frequency of SHS practice will be better among nurses than those who visits less frequent. Therefore, nurses have higher demands for convenience, time saving, and skin protection while providing antibacterial effects and perform thorough SHS.<sup>13</sup>

There was a statistically significant association between compliance of SHS and years of work experience. Similar finding was reported in the previous study.<sup>10</sup> There was a statistically significant association between compliance of SHS and attendance to previous training. Similar finding was reported in previous study.<sup>10</sup>

We used direct observation to assess the compliance of SHS practice. Direct observation of hand hygiene practices is regarded as the gold standard in measuring compliance with hand hygiene directives.<sup>15</sup>

This study was conducted in one University hospital. A larger multicenter study is needed to determine whether the results of the present study represent a general trend in operating theatres.



## CONCLUSION

Surgical team members followed the steps for SHS in general and the overall level of compliance rate was good compared to other similar studies. However, there was non-compliance with a few steps that need to be addressed in order to prevent the transmission of microorganisms. Some gaps were identified; many participants didn't lather well to 2 inches above elbow and some didn't dip the fingertips in the hand rub to decontaminate under the nails. It is recommended that knowledge of the surgical team members should be updated in the orientation

process and provide subsequent in-service trainings which is in line with the WHO surgical hand scrub guidelines.

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# Nursing Student's Fear and Willingness to Treat Patients with COVID-19 in Nepal

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## ABSTRACT

### Background

The coronavirus of 2019 (COVID-19) has exerted great pressure on the psychology of the nursing students who are currently under training. In the time of a pandemic, it is essential to investigate the willingness of nursing students to respond and treat patients infected with COVID-19.

### Objective

To find out the fear and willingness of the nursing students to treat the patient with COVID-19.

### Method

An analytical cross-sectional study design with convenient sampling technique was used to select 204 nursing students from Kathmandu University School of Medical Sciences (KUSMS). A self-constructed semi-structured questionnaire, Fear of COVID-19 scale and Willingness to treat patients with COVID-19 scale was used for online survey. One-way ANOVA, Independent t-test and Multiple Linear Regression were used for inferential statistics.

### Result

The overall mean of the fear of COVID-19 was 18.639 (6.984). The participants score for the statements "I am most afraid of Corona" and "When I watch news and stories about Corona on social media, I become nervous or anxious" composite the highest scores. The overall mean of Willingness of Nursing Students to Treat Patients with COVID-19 was 24.82 (6.268). Most of the participants reported that if they were licensed staff nurses, they would be unlikely to refuse attending work and be unlikely to refuse to care for patients with COVID-19. Living status, perceived attitude towards caring patients with COVID-19 and educational level of the nursing students were found to be the predictors of willingness to treat the patients with COVID-19.

### Conclusion

Despite the fear related to COVID-19, willingness to treat patient with COVID-19 is also strong among nursing students.

## KEY WORDS

*Fear, Willingness, COVID-19*

## INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by the newly discovered severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).<sup>1</sup> The cases and mortality of COVID-19 in Nepal are increasing day by day. For instance, the total number of confirmed cases are 520461 including 6531 deaths in Nepal.<sup>2</sup> The pandemic has produced fear, panic, and mental health problems in the public and healthcare workers.<sup>3</sup> Various studies in nursing students have revealed that anxiety and fear of COVID-19 levels were high among nursing students.<sup>4,5</sup>

In healthcare setting, willingness to cure certain diseases regardless knowing the personal risk has been a debatable issue over the years. A study done in Saudi Arabia reveals that about one-third of the medical students were willing to treat patients with COVID-19, while about one-fourth were somewhat willing.<sup>6</sup> But a study done in Spain shows that willingness were high among nursing and medical students.<sup>7</sup> Nepal is already facing a shortage of medical doctors, nurses, and paramedics before the inception of COVID-19.<sup>8</sup> So it is essential to consider alternatives aiming at expanding the national nursing workforce in order to embrace the impact of COVID-19 and to investigate the willingness of nursing students who if appropriately organized and supported could be the quickest way to meet the growing demands of Nepal's healthcare delivery system as efficiency is better if anyone is doing it willingly rather than forcibly.

However in Nepal, very little is known about the nursing students' fear of COVID-19 and their willingness to treat patients infected with COVID-19. So, the study aims to assess the nursing students' fear of COVID-19, their willingness to treat patients with COVID-19 and if any relationship occurs between the fear and the willingness to treat.

## METHODS

This was a single center, cross-sectional survey conducted among all nursing students of Kathmandu University School of Medical Sciences (KUSMS) June to July 2021. Convenient sampling technique was used to select nursing students. The sample size was calculated using OpenEpi Version 3.01. Using sampling frame of 280, confidence interval of 95%, hypothesized % of frequency of outcome factor of 50%, design effect of 1, anticipated rejected sample size of 20%, estimated sample size was 204 respondents. Data was collected using.

A self-constructed semi-structured questionnaire for socio-demographic characteristics, Fear of COVID-19 scale emerged by Ahorsu et al. to determine the level of fear related to COVID-19 in nursing students which contains seven items on a Likert scale that include 5 points.<sup>9</sup> Items were rated from "1 (Strongly Disagree) to 5 (Strongly

Agree)". The Cronbach's alpha coefficient for the scale was 0.927. Nursing students' willingness to treat patients with COVID-19 was measured by scale developed by Chilton et al.<sup>10</sup> Permission was taken from the authors. It contained seven items on a Likert scale that include 5 points. Items are rated from "1 (very unlikely) to 5 (very likely)". Four negatively stated items was reverse-coded. The Cronbach's alpha coefficient for the scale was 0.92. In the interpretation of results, higher scores indicate stronger willingness to treat patients with COVID-19.

Permission for the study was taken from the director of Nursing and Midwifery program KUSMS, and ethical clearance was taken from Institutional Review Committee (IRC-KUSMS). Data was collected using online based questionnaire (Google form). The participation was voluntary and the completed responses were included in the study. Data was verified and transferred in SPSS 23 version for statistical analysis. Percentages, frequency, mean and standard deviation was calculated. Independent t-test, one way ANOVA and Multiple Linear Regression was used for inferential statistics.

## RESULTS

A total of 204 nursing students were enrolled in this study from online survey. Slightly more than half (50.5%) of the respondents belong to the age group 20-24 years, majority (86.3%) of them were single living with their parents. About one-fourth (23.5%) of the participants had their family members infected with COVID-19 whereas less than one-fifth (14.2%) of the participants were themselves infected with COVID-19. Almost half (49%) of the respondent's family members had chronic illness. About half (46.6%) of the respondents have neutral attitude towards caring patients with COVID-19 (Table 1).

The overall mean of the fear of COVID-19 was 18.639 (6.984) out of 40 possible scores whereas the mean of the statements varies from 1.9 to 3.27. The participants score for the statements "I am most afraid of Corona" 3.27 (0.916) and "When I watch news and stories about Corona on social media, I become nervous or anxious" 3.22 (1.047) composite the highest scores (Table 2).

None of the independent variables were found to be significantly associated with the fear of COVID-19.

The overall mean of Willingness of Nursing Students to Treat Patients with COVID-19 was 24.82 out of 35 possible scores whereas the mean of the statements ranges from 3.13 to 4.03. Most of The participants reported that if they were licensed staff nurses, they would be unlikely to refuse attending work when required to care for patients with COVID-19 (Mean = 3.98, SD = 0.941). Likewise, the participants claimed that if they were licensed staff nurses, they would be unlikely to refuse to care for patients with COVID-19 (mean = 4.03, SD = 0.867)). Moreover, the



**Table 1. Demographic profile of the respondents** n=204

| Variables                           | Frequency (%) |
|-------------------------------------|---------------|
| <b>Age in years</b>                 |               |
| 15-19                               | 69 (33.8)     |
| 20-24                               | 103 (50.5)    |
| 25-29                               | 26(26)        |
| 30 and above                        | 6(2.9)        |
| <b>Marital status</b>               |               |
| Single                              | 188 (92.2)    |
| Married                             | 16 (7.8)      |
| <b>Living status</b>                |               |
| Living alone                        | 16 (7.8)      |
| Living with parents                 | 176 (86.3)    |
| Living with spouse,parents,children | 12 (5.9)      |
| <b>Educational level</b>            |               |
| PCL nursing 2 <sup>nd</sup> year    | 27 (13.3)     |
| PCL nursing 3 <sup>rd</sup> year    | 32 (15.7)     |
| B.Sc. Nursing 2 <sup>nd</sup> year  | 26(12.7)      |
| B.Sc. Nursing 3 <sup>rd</sup> year  | 33(16.2)      |
| B.Sc. Nursing 4 <sup>th</sup> year  | 27(13.2)      |
| BNS\BMID 2 <sup>nd</sup> year       | 21(10.3)      |
| BNS\BMID 3 <sup>rd</sup> year       | 22(10.8)      |

|   |            |
|---|------------|
| M.Sc. 1 <sup>st</sup> year                                      | 8(3.9)     |
| M.Sc. 2 <sup>nd</sup> year                                      | 8(3.9)     |
| <b>Family members of participants infected by COVID-19</b>      |            |
| Yes   | 48(23.5%)  |
| No  | 156(76.5%) |
| <b>Participants infected by COVID-19</b>                        |            |
| Yes   | 29(14.2)   |
| No  | 175 (85.8) |
| <b>Presence of chronic illness in the participants</b>          |            |
| Yes   | 5 (2.5)    |
| No  | 199 (97.5) |
| <b>Presence of chronic illness in any family members</b>        |            |
| Yes   | 100(49)    |
| No  | 104(51)    |
| <b>History of psychiatric consult</b>                           |            |
| Yes   | 12(5.9)    |
| No  | 192(94.1)  |
| <b>Perceived attitude towards caring patients with COVID-19</b> |            |
| Positive  | 107(52.5)  |
| Neutral   | 95(46.6)   |
| Negative  | 2(1)       |

**Table 2. Fear of COVID-19among nursing students**

n=204

| Fear of COVID-19 Items   | Strongly disagree [f(%)] | Disagree [f(%)] | Neutral [f(%)] | Agree [f(%)] | Strongly agree [f(%)] | Mean(SD)     |
|--|--------------------------|-----------------|----------------|--------------|-----------------------|--------------|
| I am most afraid of Corona   | 7(3.4)                   | 30(14.7)        | 82(40.2)       | 71(34.8)     | 14(6.9)               | 3.27(0.916)  |
| It makes me uncomfortable to think about Corona  | 15(7.4)                  | 72(35.3)        | 55(27)         | 54(26.5)     | 8(3.9)                | 2.84(1.024)  |
| My hands become clammy when I think about Corona   | 47(23)                   | 96(47.1)        | 50(24.5)       | 9(4.4)       | 2(1)                  | 2.13(0.852)  |
| I am afraid of losing my life because of Corona  | 20(9.8)                  | 67(32.8)        | 47(23)         | 54(25.5)     | 16(7.8)               | 2.897(1.138) |
| When I watch news and stories about Corona on social media, I become nervous or anxious. | 16(7.8)                  | 32(15.7)        | 62(30.4)       | 80(39.2)     | 14(6.9)               | 3.22(1.047)  |
| I cannot sleep because I'm worrying about getting Corona.                                | 65(31.9)                 | 102(50)         | 30(14.7)       | 6(2.9)       | 1(0.5)                | 1.9 (0.788)  |
| My heart races or palpitates when I think about getting Corona.                          | 40(19.6)                 | 82(40.2)        | 48(23.5)       | 32(15.7)     | 2(1)                  | 2.38(1.003)  |

**Table 3. Willingness of Nursing Students to Treat Patients with COVID-19**

| Willingness indicators  | Very unlikely | Unlikely | Neutral  | Likely    | Very likely | Cumulative Mean |
|---|---------------|----------|----------|-----------|-------------|-----------------|
| How willing would you be to attend clinical placement knowing there were patients infected with COVID-19?                         | 13(6.4)       | 33(16.2) | 79(38.7) | 73(35.8)  | 6(2.9)      | 3.13(0.938)     |
| How willing would you be to attend clinical placement knowing there were patients suspected of being infected with COVID-19?      | 9(4.4)        | 34(16.7) | 76(37.3) | 78(38.2)  | 7(3.4)      | 3.2(0.91)       |
| How likely would you be to care for patients with COVID-19 if you had more information?   | 3(1.5)        | 13(6.4)  | 51(25)   | 116(56.9) | 21(10.3)    | 3.68(0.801)     |
| How likely are you to refuse to attend clinical placement if you are required to care for patients with COVID-19?                 | 10(4.9)       | 87(42.6) | 72(35.3) | 28(13.7)  | 7(3.4)      | 3.32(0.894)     |
| How likely are you to refuse to care for patients with COVID-19?  | 20(9.8)       | 93(45.6) | 59(28.9) | 28(13.7)  | 4(2)        | 3.48(0.917)     |
| If you were a licensed nurse, how likely are you to refuse to attend work if you are required to care for patients with COVID-19? | 65(31.9)      | 90(44.1) | 32(15.7) | 14(6.9)   | 3(1.5)      | 3.98(0.941)     |
| If you were a licensed nurse, how likely are you to refuse to care for patients with COVID-19?                                    | 63(30.9)      | 99(48.5) | 31(15.2) | 8(3.9)    | 3(1.5)      | 4.03(0.867)     |

participants were more likely to care for patients with COVID-19 if they had more information about the disease (Mean=3.68, SD=0.801) (Table 3).

Among the nursing students, living status, perceived attitude towards caring patients with COVID-19, and educational level of the students were found to be the predictors of willingness to treat patient with COVID-19 in multiple linear regression analyses (Table 4).

**Table 4. Predictors of respondents' willingness to treat patient with COVID-19** n=204

| Variables   | Unstandard-<br>ized<br>Coefficients | Unstandardized<br>Coefficients | t     | Sig.  |        |
|---|-------------------------------------|--------------------------------|-------|-------|--------|
| Living status   | 0.631                               | 0.095                          | 0.399 | 6.619 | .000   |
| Perceived at-<br>titude towards<br>caring patients<br>with COVID-19 | 0.307                               | 0.068                          | 0.272 | 4.495 | <0.001 |

There was no significant relation between fear of COVID-19 and willingness to treat patient with COVID-19 (Table 5).

**Table 5. Relationships between fear of COVID-19 and willingness to treat patients with COVID-19**

| Variables                                   | Pearson's correlation coefficient (r) | p-value |
|---|---------------------------------------|---------|
| Fear of COVID-19                            | -0.043                                | 0.539   |
| Willingness to treat patients with COVID-19 |                                       |         |

## DISCUSSION

The current study assessed the fear of COVID-19 among nursing students and their willingness to treat patients with COVID-19. In this study, the overall mean score of fear of COVID-19 was 18.637 which is in consistent with a study done at Turkey which has the overall mean of 17.1 among medical students.<sup>11</sup> And also with another study in Turkey among nursing students where overall mean was 18.97.<sup>4</sup> However a study done in Mexico revealed that the overall mean score of fear of COVID-19 among nursing students was 25.7.<sup>12</sup> This difference in the mean may be due to the exposure of Asian population to various infectious diseases as compared to the American countries. The limited exposure to the infectious diseases might have increased the fear related to COVID-19.

Our finding of FCV-19S scores between different age groups of students shows that there is no significant association between the levels of COVID-19 fear and participants' age which is consistent with a study carried out by in Turkey among medical students.<sup>11</sup> However, another study by Nguyen et al. concluded that older medical students (23-26 years of age) were affected less than younger medical students according to their FVC-19S scores.<sup>3</sup> The possible

reason behind no significant association could be due to fewer number of students with older age were enrolled in the study.

In our study, there was no significant difference between FCV-19S scores in previously infected and non-infected participants. In contrary, in a study done in Turkey among medical students a considerable difference found between FCV-19S scores where previously infected participants had a lower mean score.<sup>11</sup> This difference may be because in our study only a very few proportion of students were infected with COVID-19.

Our study found no statistically significant relationship between the type of education and levels of COVID-19 fear. However a study done in Turkey concluded that later academic year had lower scores of fear than those at earlier academic year.<sup>11</sup> The contrast finding may be because of likert response scales used for assessment and limited number of participants from the higher academic years.

In this study, the overall mean score of the willingness to treat of participants was 24.82, with an average mean of 3.55 which is more higher as compared to the study conducted among nursing students and interns in Saudi Arabia where the overall mean score was 20.19 with an average mean of 2.89.<sup>13</sup> This discrepancy could be because of differences in study settings.

Another notable finding from this study was majority of the participants reported that if they were licensed staff nurses, they were unlikely to refuse attending work when required to care for patients with COVID-19 and unlikely to refuse to care for patients with COVID-19. The result is consistent with the study done among nursing students and interns in Saudi Arabia.<sup>13</sup> This similarity may be because the licensed nurses are morally and legally obliged to treat patients despite the risk of infection.

In the current study, living status, perceived attitude towards caring patients with COVID-19, and educational level of the students were found to be the predictors of willingness to treat patient with COVID-19 in multiple linear regression analyses. In a study conducted in South Korea shows that the willingness to treat COVID-19 patients is higher in senior students and the same study supported that the COVID-19 related attitude was higher in the willingness group than in the unwillingness group.<sup>14</sup>

## CONCLUSION

The current study shows that the fear of COVID-19 among nursing students was lower as compared to other studies. There was no significant difference between the age, marital status, living status, educational level, participants and family members infected with COVID-19, perceived attitude towards COVID-19 and the fear of COVID-19. The study also concludes that willingness to treat patients with COVID-19 was higher in nursing students. Significant

differences was found for living status, educational level, perceived attitude towards COVID-19 and willingness to treat patient with COVID-19. There was no significant relation between fear of COVID-19 and willingness to treat patient with COVID-19. It can be concluded that despite

the fear but higher willingness of nursing students, we can employ nursing students to meet the increasing demands of the Nepal's healthcare delivery system and to maximize the nation's ability to respond to the COVID-19 pandemic.

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# Determination of the Reference Value of 1-minute Sit to Stand Test for Healthy Nepalese Population: A Cross-sectional Study

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## ABSTRACT

### Background

1-min Sit to Stand (STS) test is a rapid and simple test used to measure exercise capacity especially lower limb muscle strength and muscular endurance.

### Objective

To determine the reference value for a 1-min Sit to Stand test in the Nepalese population.

### Method

A cross-sectional study was conducted to establish the age and gender specific percentile reference value of 1-min Sit to Stand. The multiple linear regression analysis was used to determine variation in 1-min Sit to Stand test performance with gender, age, BMI, geographic region, and smoking status as predictors. The Pearson's correlation coefficient was used to correlate the performance of the Six-Minute Walk Test (6MWT) and 1-min Sit to Stand.

### Result

Five hundred and seventy-five participants were recruited for the 1-min Sit to Stand test. The median repetition for aged 20-29 years was 41/min in males and 40/min in females. The median concurrently decreased for both males and females with increase in age. Age and gender had a significant association with 1-min Sit to Stand test performance. There was a statistically significant correlation between 1-min Sit to Stand test and Six-Minute Walk Test.

### Conclusion

The median score of the 1-min Sit to Stand test of the males was similar to the females. The study also observed that age and gender were the significant predictors of 1-min Sit to Stand test. The reference values of 1-min Sit to Stand are valid for the Nepalese population.

## KEY WORDS

*Muscular strength, Reference value, Sit to stand test*

## INTRODUCTION

Exercise capacity is an indicator of physical fitness in both healthy and diseased populations. Muscular strength and endurance are two important components that could determine morbidity and exercise capacity in individuals.<sup>1</sup> Sit to stand test is a commonly used test to assess the lower body muscular strength and endurance that measures mobility-related function and physical performance. Among the numerous versions of sit to stand tests; one minute sit to stand test (1-min STS) test is considered as a practicable test for measuring the peripheral muscle strength of the lower body.<sup>2</sup>

1-min STS test is a rapid and simple test that could be administered where the space and time are limited. It requires an optimal height chair wherein the subjects perform repeated sitting and standing for one minute without any support.<sup>3</sup> The normative reference has been established in European countries across different gender and age group.<sup>4</sup> The repetition is observed to decline with an increase in age and similarly, it is observed to be higher in the males in comparison to the females of same age category. The performance of the 1-min STS test is influenced by body composition, nutrition status, environmental differences, and personal lifestyle.<sup>5</sup> It has a strong correlation with the performance of the six minute walk test (6MWT).<sup>6,7</sup>

Study has determined that the Nepalese population have optimal level of physical activity while majority of population meet the recommended level.<sup>8</sup> However several other factors such as nutrition deficiency, lower self-efficacy and motivation have known to lower the level of fitness in Nepalese population.<sup>9-11</sup> There is lack of standardized reference range for 1-min STS test for Nepalese population. Therefore, the objective of this study is to establish the standardized reference value for the 1-min STS test for the Nepalese population

## METHODS

The ethical approval was obtained from the Institutional Review Committee of Kathmandu University School of Medical Sciences (IRC-KUSMS) with approval number 56/20. A cross-sectional study was conducted from August 2020 to August 2021 at Dhulikhel hospital, Nepal. In total 575 participants (aged 20 years and above) were enrolled through a convenience sampling, out of which 296 were males and 279 were females. People with cardiovascular abnormalities, musculoskeletal conditions, neurological conditions, pregnant women, and those who have undergone recent surgeries which could affect sit-stand activities were excluded.

The participants were provided information on the testing protocol including the safety measures, risks and benefits.

A written consent was obtained for the participant's enrollment. The demographic information from the participants were collected such as age (in years), gender (male/ female), geographical regions (himalayan/ hills/ terai), height (in meters), weight (in kgs), and accordingly calculated the BMI (kg/m<sup>2</sup>). Additional information on the participants' smoking status (Yes/ No) was included. The standard testing guideline protocol for 1-min STS test and 6MWT was used in the study. 1-min STS test was followed by 6MWT after a resting period of 30 minutes in thirty five participants.

Prior to the commencement of the testing, a pre-assessment for the signs and symptoms of cardiovascular conditions (red flags) was conducted.<sup>12</sup> The pre-assessment included vital assessment, chest pain, headaches, dizziness, exertion at rest. None of the participants exhibited the red flags. The vital assessment includes oxygen saturation, heart rate and blood pressure measurement. The 1-min STS test was performed following the pre-assessment based on the Bohannon's 2012 recommendations.<sup>2</sup> The standard height of the chair was (44-46) cm with no armrest. Each participant would stand with full knee extension while keeping their feet on the ground and their hands were placed across their chest or on their lap. Prior to commencement of testing, the procedure was demonstrated to the participants including necessary instruction as per the 1-min STS protocol. The participants were instructed to stop after the time is over and the number of repetitions was recorded. The level of exertion and post vitals were measured.

Thirty five participants performed 6MWT based on the American Thoracic Society guideline for six minute walk test.<sup>13</sup> Before the test, a resting period of thirty minutes was provided. The test was performed on a 30 meters flat pathway with a standardized instructions and encouragement. The distance walked after the test was recorded as the primary outcome. Oxygen saturation, heart rate and exertion level were measured secondarily. The level of exertion was measured by modified Borg RPE scale.<sup>14,15</sup> The scale ranges from 0-10 with 0 being "None" and 10 being "maximum" exertion. The participants were asked to provide the level of exertion immediately on completion of testing protocols.

The demographic information was summarized using frequency (percentage) for categorical data and mean (standard deviation) [range] for continuous variable. The percentiles outcomes (5<sup>th</sup>, 10<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, 90<sup>th</sup> and 95<sup>th</sup>) of 1-min STS test were stratified into different age groups. The Kolmogorov- Smirnov's (K-S) test was used to determine the distribution of test score; the statistically significant results indicated a non- uniform distribution. Multiple linear regression analysis was used to determine variation in the 1-min STS test outcome adjusted to gender, age, BMI as predictors in adjusted model 1. Similarly, in adjusted Model 2 smoking status was additional predictors in multiple regression analysis model. Furthermore,



Pearson correlation was used to determine the relationship between the 1-min STS test and the 6MWT performances. The statistical analysis was done using SPSS version 25.

## RESULTS

The mean age of the participants in this study was 31 years (SD 13). The participants were stratified into five different age categories. Nearly three fourth of the participants had normal BMI. Similarly three fourth participants were smokers and lived in hilly regions (Table 1).

**Table 1. Demographic characteristics of the participants (n = 575)**

| Variables                       | Frequency (Percentage) |
|---------------------------------|------------------------|
| <b>Gender</b>                   |                        |
| Male                            | 296 (51.5%)            |
| Female                          | 279 (48.5%)            |
| <b>Age (in years) in groups</b> |                        |
| 20 to 29                        | 383 (66.6%)            |
| 30 to 39                        | 71 (12.3%)             |
| 40 to 49                        | 55 (9.6%)              |
| 50 to 59                        | 38 (6.6%)              |
| Above 60                        | 28 (4.9%)              |
| Height (cm), mean (SD)[Range]   | 161 (8.3) [125 to 188] |
| Weight (kg), mean (SD)[Range]   | 60 (9.3) [38 to 90]    |
| <b>BMI (kg/m<sup>2</sup>)</b>   |                        |
| Underweight (< 18.5)            | 32 (5.6%)              |
| Normal (18.5 to 24.9)           | 420 (73.0%)            |
| Overweight (25 to 29.9)         | 123 (21.4%)            |
| <b>Smoking status</b>           |                        |
| No                              | 122 (21.2%)            |
| Yes                             | 453 (78.8%)            |
| <b>Geographical region</b>      |                        |
| Himalayan                       | 8 (1.4%)               |
| Hilly                           | 449 (78.1%)            |
| Terai                           | 118 (20.5%)            |

Table 2 describes the 1-min STS performance for each age group in accordance to the gender. The average median repetitions in the males ranged from 41/min in the age group 20-29 years to 23 in aged 60 years and above. In the females, the average median repetitions were 40/min in the age group 20-29 years and 22/min in aged 60 years

and above. The number of repetitions was almost similar in both the males and females with average repetition higher in the male population. There was a constant decline of performance with increase in age among the participants.

The K-S test for normality was significant for sit to stand repetitions indicating the non-uniform distribution. Table 3 presents the factors affecting the performance of 1-min STS. Age and gender had significant association with the 1-min STS performance after adjusting to age, gender, BMI, smoking status and geographic region. In an unadjusted model, the individual factors such as age, gender, BMI, smoking status and geographic regions had significant association with the 1-min STS performance. The participants' age was observed to have the highest variance (30%).

Thirty five participants were included for 6MWT. The correlation between the 1-min STS test and the 6MWT was performed for test outcomes and exercise intensity. A moderately strong co relation was observed for the outcomes of the tests ( $r = 0.61$ ), whereas a near perfect correlation was observed for the exercise intensities generated by those tests ( $r = 0.98$ ). Both the correlations were statistically significant (Table 4).

## DISCUSSION

In this study we determined the reference values of 1-min STS test performance for Nepalese population based on one year data of Dhulikhel hospital. The references were provided for different age groups and gender. Age and gender was primary predictor of 1-min STS test while geographical region, BMI and smoking status were individually associated to 1-min STS test. The established reference values and equation would be appropriate to use for the interpretation of STS performance in individuals.

The scores of 1-min STS test were calculated in different percentile that include 5<sup>th</sup>, 10<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, 90<sup>th</sup> and 95<sup>th</sup>. The values can be interpreted according to the percentile rankings. The different percentile values of 1-min STS test was categorized as low (5<sup>th</sup> to 25<sup>th</sup>), average (26<sup>th</sup> to 50<sup>th</sup>), good (51<sup>st</sup> to 75<sup>th</sup>) and excellent (76<sup>th</sup> to 95<sup>th</sup>) performance.<sup>12</sup> In the younger age group of the males (20 to 29 years), the median score was 41 repetitions/min while for the older age group (> 60 years), the median value was 23

**Table 2. Reference values of 1-min STS test (n = 575)**

| Age groups in years | Number of Repetitions |     |     |     |     |     |     |         |     |     |     |     |     |     |
|---------------------|-----------------------|-----|-----|-----|-----|-----|-----|---------|-----|-----|-----|-----|-----|-----|
|                     | Males                 |     |     |     |     |     |     | Females |     |     |     |     |     |     |
|                     | p5                    | p10 | p25 | p50 | p75 | p90 | p95 | p5      | p10 | p25 | p50 | p75 | p90 | p95 |
| 20 to 29            | 33                    | 35  | 39  | 41  | 45  | 51  | 53  | 28      | 30  | 35  | 40  | 46  | 51  | 54  |
| 30 to 39            | 25                    | 29  | 34  | 38  | 40  | 46  | 46  | 23      | 25  | 28  | 34  | 38  | 40  | 45  |
| 40 to 49            | 23                    | 24  | 33  | 36  | 40  | 49  | 49  | 21      | 22  | 27  | 31  | 38  | 43  | 49  |
| 50 to 59            | 23                    | 23  | 27  | 31  | 38  | 41  | 42  | 22      | 22  | 23  | 29  | 32  | 34  |     |
| Above 60            | 13                    | 19  | 20  | 23  | 31  | 36  | 37  | 20      | 20  | 22  | 23  | 27  |     |     |

**Table 3.** Linear regression analysis for the variables predicting the 1-min STS test performance

| Models and Variables       | R <sup>2</sup> | Sit to stand repetitions   |                          |       | P-value |
|----------------------------|----------------|----------------------------|--------------------------|-------|---------|
|                            |                | Unstandardized Coefficient | Standardized Coefficient |       |         |
|                            |                | B                          | SE                       | B     |         |
| <b>a. Unadjusted</b>       |                |                            |                          |       |         |
| Age                        | 0.30           | -0.37                      | 0.03                     | -0.54 | 0.000** |
| Gender                     | 0.01           | -1.47                      | 0.70                     | -0.09 | 0.037** |
| BMI                        | 0.02           | -0.48                      | 0.12                     | 0.16  | 0.000** |
| Smoking status             | 0.02           | -3.26                      | 0.85                     | 0.16  | 0.000** |
| Geographical regions       | 0.01           | 0.93                       | 0.43                     | 0.09  | 0.033** |
| <b>b. Adjusted model 1</b> |                |                            |                          |       |         |
| Age                        |                | -0.37                      | 0.02                     | -0.56 | 0.000** |
| Gender                     | 0.32           | -2.76                      | 0.60                     | -0.17 | 0.000** |
| BMI                        |                | -0.13                      | 0.10                     | -0.05 | 0.223   |
| <b>c. Adjusted model 2</b> |                |                            |                          |       |         |
| Age                        |                | 0.38                       | 0.03                     | -0.57 | 0.000** |
| Gender                     |                | -2.58                      | 0.63                     | -0.16 | 0.000** |
| BMI                        | 0.32           | -0.14                      | 0.11                     | -0.05 | 0.203   |
| Smoking status             |                | 0.92                       | 0.70                     | 0.05  | 0.186   |
| Geographical regions       |                | -0.33                      | 0.37                     | -0.03 | 0.378   |

\*\*Linear regression is significant (p value < 0.05)

repetitions/min. The similar difference was also observed in the female population across the same age groups. The median difference of 18+ repetition could be attributed to the decrease in the lower muscle strength with increase in age.<sup>10</sup> A score below the average is indicated to reduce in lower body muscular strength.<sup>2,16</sup> In our study, the 1-min STS test scores in each age groups were lower in comparison to the European population.<sup>4</sup> Studies have indicated that the fat content in the Asian population is higher in compared to European population with same BMI measurement.<sup>17</sup> It is known that the muscle mass and the fat content have effect in the muscle strength. Muscle mass and height have direct relation with the muscle strength whereas obesity and muscle strength have the inverse relation.<sup>18</sup> World population review have stated that the average height of Nepalese people ranks sixth from the bottom compared to the other countries.<sup>19</sup> Furthermore, Nepalese have insufficient energy intake and protein in their diet which could deprive body of overall lean muscle mass and strength.<sup>10</sup> The shorter stature of the Nepalese and insufficient energy intake could have additionally lowered the muscle strength.

In this study, it is found that the age and gender had significant association with the 1-min STS outcome after adjusting to the other variables such as BMI, smoking status, geographical region. In unadjusted model, all the variables

**Table 4.** Correlation between the 1-min STS test and the 6MWT (n = 35)

| Tests  | Outcome               | Co-relation coefficient | Exercise intensity (% of Heart rate reserve), Mean (SD) [range] | Co-relation coefficient |
|--|-----------------------|-------------------------|---|-------------------------|
| 1-min STS test in repetitions, Mean (SD) [Range]   | 44 (6) [33 to 58]     | 0.61**                  | 49.5 (13) [30 to 80]  | 0.98**                  |
| 6MWT walking distance in meters, mean (SD) [Range] | 511 (76) [353 to 633] |                         | 50.1 (13) [31 to 82]  |                         |

\*\*Co relation is significant at 0.001 level

were independently associated to the performance of 1-min STS test. The highest variance was observed in age (30%) indicating that the result of 1-min STS test would significantly decrease with the increase in age. Studies have determined that muscle wasting with reported 25% smaller fiber cross-sectional area in the lower limb muscles of smokers.<sup>20,21</sup> A recent study had concluded that hypoxia related to high altitude could lead to loss of muscle mass and function.<sup>22</sup> While performance tests such as STS is used as the measure of mobility related function, 6MWT is used to assess the functional capacity.<sup>1,23</sup> Many literatures have closely linked the performance of the 6MWT to the mobility related function tests including the 1-min STS test.<sup>6,7,24,25</sup> The 6MWT was assessed in terms of the walking distance and the intensity of exercise performance. The average distance walked during the 6MWT was observed to be 511 meters (SD 76) which corresponds with the average walking distance of a Nepalese individual.<sup>26</sup> There was moderately strong correlation ( $r = 0.6$ ) between the performance of 6MWT and 1-min STS test indicating that our results of 1-min STS test to be applicable to the general Nepalese population. In the previous studies, similar moderate correlations were observed between 6MWT and 1-min STS test in healthy individuals.<sup>7,24,25</sup> In our study, the exercise intensity of 6MWT and 1-min STS test were both averaged at the intensity of 50 % of heart rate reserve suggesting the same output of the functional capacity during the performance for both the tests. The correlations of the exercise intensity for both the test performance were strongly correlated ( $r = 0.98$ ).

The primary limitation of the study was lack of diagnostic checking in regression relationship which could affect the quality of relation with the predictors. Besides, the other limitation includes uneven distribution of sample.

## CONCLUSION

The median score of 1-min STS test for both the gender were similar. The test percentile score for 1-min STS test

was observed highest among the younger age groups which declines with the advancing age. This study observed that the age and gender were the important predictors of 1-min STS test performance. The performance of 1-min STS test was closely associated with the performance of 6MWT. The reference values of 1-min STS test are valid to be used by the Nepalese population.

To include even distribution of diverse population based on ethnicity, geographic location across all age groups

and gender, a larger sample sized study is recommended. Further recommendations are to include diseased persons and compare their findings to those of healthy individuals.

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# Health Information Needs among Pregnant Women attending Antenatal Out Patient Department in Dhulikhel Hospital

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## ABSTRACT

### Background

Pregnancy health information needs refers to the perceived information needs of pregnant women regarding healthy lifestyle, pregnancy related issues, safe and unsafe medication, psychosocial issues during pregnancy. Pregnancy outcomes could be improved if pregnant women are provided with pregnancy related information necessary to empower them to overcome pregnancy challenges.

### Objective

To identify health information needs among pregnant women attending Antenatal outpatient Department (OPD) in Dhulikhel Hospital.

### Method

A descriptive cross sectional study was conducted. Purposive sampling technique was used to select the sample from total 304 pregnant women attending Antenatal Outpatient department of Dhulikhel Hospital. Structured interview schedule was used to collect data. Collected data were analyzed by using descriptive as well as inferential statistics.

### Result

In this study the overall health information scores reveals that slightly more than half (52.0%) of pregnant women had higher health information needs whereas nearly half (48.0%) of pregnant women had lower health information needs with the mean score 83.3. Age and educational level were found significantly associated with health information needs of pregnant women.

### Conclusion

The overall health information needs of pregnant women were high and unique to different women. The highest health information needs was found on healthy lifestyle during pregnancy. The health professionals should emphasize in providing quality of health education and counseling during pregnancy to meet optimal health demand of pregnant women.

## KEY WORDS

*Health information needs, Pregnant women, Sources of health information*

## INTRODUCTION

Preventable mortality and morbidity remain a challenge in many developing countries like Nepal. Every pregnant woman faces the risk of sudden, unpredictable complications that could contribute for maternal and neonatal death.<sup>1</sup>

Nepal has committed to doing its part to achieve Sustainable Development Goal (SDG) target 3.1 of reducing the global MMR to less than 70 maternal deaths per 100,000 live births by 2030. To achieve this ambitious target, Nepal will need to reduce its MMR by at least 7% annually addressing severe inequities in maternal health access, utilization and quality. Each year approximately 287,000 women die from complications related to pregnancy and childbirth, 99% of these deaths occurring in developing countries. Maternal mortality ratio in developing regions is fifteen times higher than in developed regions.<sup>2</sup>

Pregnancy period is a period that women experience physiological changes and eventually role change.<sup>3</sup> The availability, access to and utilization of health information would, no doubt, translate to a safe delivery and healthy life style for a woman during pregnancy thereby reducing maternal mortality.<sup>4</sup> Concerned on information regarding pregnancy can be considered as a sufficient solution in order to make these major problems nonexistent.<sup>5</sup>

Determining pregnancy and child birth information need is critical for development of intervention strategies addressing pregnant women.<sup>6</sup> Pregnancy outcomes could be improved if pregnant women are provided with pregnancy related information necessary to empower them to overcome pregnancy challenges.<sup>7</sup>

Information provided to pregnant women ought to enable women to identify pregnancy related problems when they occur, as well as engaging in preventive health practices that would lead to the safe delivery of their child.<sup>8</sup> There are concerns regarding the lack of comprehensive health education to address the information needs of pregnant women in low resource settings where health risks are high.<sup>9</sup>

This study was carried out with the aim of investigating information needs among pregnant women.

## METHODS

A descriptive cross-sectional study was conducted among primi pregnant women of age above 18 years attending ANC OPD of Dhulikhel Hospital, Nepal. Data was collected from 12<sup>th</sup> May to 8<sup>th</sup> June 2019. The sample size was determined by using the following formula:  $n = Z^2 pq / d^2$ . Estimated proportion (p) was taken 58.3% based on literature review. Hence the calculated sample size was 304. Sampling technique was non probability, purposive sampling technique.

A structured and semi structured questionnaire was developed through literature review, different research guidelines and seeking opinion of research advisor and subject expertise for data collection. The tool consist of two parts: Part I socio-demographic and obstetric information which consist of 5 items and Part II Pregnancy Health Information Needs Scale (PHINS). The PHINS consist of 4 sub category (1) Information needs on healthy lifestyle during pregnancy consist of 8 items (2) Pregnancy related information needs during pregnancy consist of 7 items (3) Medication information needs during pregnancy consist of 2 items (4) Psychosocial information needs during pregnancy consist of 3 items. All the items were measured by five point Likert scale. It was coded as (1) for strongly disagree, (2) for disagree, (3) for neither agree nor disagree, (4) for agree and (5) for strongly agree. For ease interpretation, PHINS Items were re-coded on two point scale either agree (combination of strongly agree and agree) or disagree (combination of neither agree nor disagree, disagree and strongly disagree).

The mean score from PHINS scale of the 20 items on PHINS was calculated and it was taken as a cut-off point to categorize as higher or lower needs for information. Score above the total mean score will indicate as higher information need. Score below or equal to the total mean score will indicate as lower information need.

All questionnaires were translated into Nepali. Data collection tool was pre-tested in 10% of the total sample. Those participants included in pre-test were excluded in the main study and necessary corrections were done. Face to face interview technique was used for data collection. Privacy and confidentiality of the respondents was maintained. Information of the respondents was used only for research. Informed written consent was obtained from each respondent prior to interview. The study was conducted after obtaining permission from concerned authority. Content validity of the tool was established by consulting with research advisor, review of the literature, consulting with the subject expertise. Statistical Package for Social Science (SPSS) version 23 was used for data analysis. Descriptive statistics (mean, frequency, standard deviation and percentage) was applied and inferential statistics (Chi square test) was applied to test the association between health information needs with selected variables and p value < 0.05 was considered as statistically significantly.

## RESULTS

The majority of the women (84.5%) were between 20-30 years of age, (12.8%) were of age below 20 whereas few (2.7%) were of age more than 30. The mean age of pregnant women was 23.48 years with S.D  $\pm$  3.450. Almost all of the pregnant women (99.0%) were literate while very few of them (1.0%) were illiterate. Among literate,

more than two fifth (46.1%) had secondary level education whereas more than one fifth (27.3%) had higher secondary level education. Likewise, more than half of pregnant women (57.9%) were homemaker whereas only (6.3 %) of them were engaged in others occupation namely tailoring, teaching, student. More than half (54.3%) of the women were of third trimester and rest of others were of first and second trimester.

**Table 1. Socio-demographic characteristics of the respondents (n= 304)**

| Characteristics                  | Frequency (f) | Percentage (%) |
|----------------------------------|---------------|----------------|
| <b>Age (in completed years)</b>  |               |                |
| < 20                             | 39            | 12.8           |
| 20-30                            | 257           | 84.5           |
| > 30                             | 8             | 2.7            |
| <b>Educational status</b>        |               |                |
| Illiterate                       | 3             | 1.0            |
| Literate                         | 301           | 99.0           |
| <b>Educational level (n=301)</b> |               |                |
| Can read and write               | 29            | 9.5            |
| Primary level                    | 52            | 17.1           |
| Secondary level                  | 137           | 46.1           |
| Higher secondary level           | 83            | 27.3           |
| <b>Occupation</b>                |               |                |
| Homemaker                        | 176           | 57.9           |
| Agriculture                      | 33            | 10.9           |
| Business                         | 50            | 16.3           |
| Service holder                   | 26            | 8.6            |
| Others                           | 19            | 6.3            |
| <b>Trimester</b>                 |               |                |
| First Trimester                  | 47            | 15.5           |
| Second Trimester                 | 92            | 30.2           |
| Third Trimester                  | 165           | 54.3           |

Table 2 describes about items score of information need on healthy lifestyle during pregnancy, the main information needs perceived by the women were the health information need on effects of alcohol has mean score of  $4.44 \pm 0.66$  in which strongly agreed by 52.3% while none of the respondent's commented on strongly disagreed.

Table 3 illustrates the pregnancy related information needs during pregnancy, the information need on special investigations has mean score of  $4.39 \pm 0.71$  in which strongly agreed by more than half 155 (51%) while none of respondent's strongly disagreed.

Table 4 presents the health information need on effect of illegal drugs has mean score of  $4.36 \pm 0.80$  in which strongly agreed by more than half 157 (51.6%) and strongly disagreed by minority 3 (1.0%) of the respondent's.

Regarding, psychosocial information needs, the health information need on use effects of domestic abuse has mean score of  $3.85 \pm 0.95$  in which strongly agreed by nearly

**Table 2. Information need on healthy lifestyle during pregnancy (n= 304)**

| Information need on healthy lifestyle                          | SD f(%) | D f(%)   | N f(%)    | A f(%)     | SA f(%)    | Mean $\pm$ standard deviation |
|--|---------|----------|-----------|------------|------------|-------------------------------|
| Health information need on food                                | 1 (0.3) | 5 (1.6)  | 7 (2.3)   | 163 (53.6) | 128 (42.1) | 4.36 $\pm$ 0.64               |
| Health information need on daily activities and rest           | 2 (0.7) | 5 (1.6)  | 23 (7.6)  | 163 (53.6) | 111 (36.5) | 4.24 $\pm$ 0.71               |
| Health information need on safe exercises                      | 1 (0.3) | 8 (2.6)  | 27 (8.9)  | 170 (55.9) | 98 (32.2)  | 4.17 $\pm$ 0.72               |
| Health information need on weight gain                         | 1 (0.3) | 11 (3.6) | 38 (12.5) | 152 (52)   | 102 (33.6) | 4.13 $\pm$ 0.78               |
| Health information need on safe sex                            | 2 (0.7) | 18 (5.9) | 33 (10.9) | 140 (46.1) | 111 (36.5) | 4.12 $\pm$ 0.87               |
| Health information need on safe travel                         | 1 (0.3) | 9 (3)    | 24 (7.9)  | 146 (48)   | 124 (40.8) | 4.26 $\pm$ 0.75               |
| Health information need on effects of smoking                  | 0       | 3 (1)    | 18 (5.9)  | 133 (43.8) | 150 (49.3) | 4.41 $\pm$ 0.64               |
| Health information need on effects of alcohol during pregnancy | 0       | 3 (1)    | 20 (6.6)  | 122 (40.1) | 159 (52.3) | 4.44 $\pm$ 0.66               |
| Mean score: 34.13 $\pm$ 5.77                                   |         |          |           |            |            |                               |

SA:Strongly Agree, A:Agree, N:Neutral, SD:Strongly disagree, D:Disagree

more than one fifth 77 (25.3%) and strongly disagreed by few 4 (1.3%) of the respondent's.

Table 5 illustrates about the respondent's overall health information needs of pregnant women. Slightly more than half of respondent's (52.0%) had higher information needs while remaining (48%) of the respondent had lower information needs. The mean score of respondent's on pregnancy health information need scale was 83.36 and standard deviation was  $\pm 9.728$ .

Pregnancy health information needs of the respondents was significantly associated with age and educational level ( $p \leq 0.05$ ) but not significantly associated with other variables ( $p \geq 0.05$ )

## DISCUSSION

In this study, the overall health information needs score reveals that slightly more than half (52.0%) of pregnant women had higher pregnancy health information needs whereas nearly half (48%) of pregnant women had lower information needs with the mean score of 83.3. This is consistent with the findings of South Africa which showed that (54.2%) of pregnant women had high and (45.8%) had low information needs with the mean score 80.5. A study done in Egypt (39%) had higher and (65%) had lower information needs.<sup>11</sup> This high discrepancy might be due to obstetrical characteristics of the respondents.

**Table 3.** Pregnancy related information needs during pregnancy (n= 304)

| Pregnancy related information need                                       | SD f(%) | D f(%)    | N f(%)    | A f(%)     | SA f(%)    | Mean $\pm$ standard deviation |
|--|---------|-----------|-----------|------------|------------|-------------------------------|
| Health information need on special investigations                        | 0       | 5 (1.6)   | 26 (8.6)  | 118 (38.8) | 155 (51)   | 4.39 $\pm$ 0.71               |
| Health information need on danger signs                                  | 0       | 4 (1.3)   | 25 (8.2)  | 127 (41.8) | 148 (48.7) | 4.38 $\pm$ 0.69               |
| Health information need on development of fetus                          | 4 (1.3) | 6 (2)     | 19 (6.3)  | 162 (53.3) | 113 (37.2) | 4.23 $\pm$ 0.76               |
| Health information need on what to do if labor starts early              | 1 (0.3) | 5 (1.6)   | 27 (8.9)  | 166 (54.6) | 105 (34.5) | 4.21 $\pm$ 0.69               |
| Health information need on birth preparedness and complication readiness | 2 (0.7) | 10 (3.3)  | 35 (11.5) | 150 (49.3) | 107 (35.2) | 4.15 $\pm$ 0.79               |
| Health information need on use of birth control measures                 | 2 (0.7) | 40 (13.2) | 53 (17.4) | 130 (42.8) | 79 (26)    | 3.80 $\pm$ 0.09               |
| Health information need on breast feeding preparation                    | 2 (0.7) | 35 (11.5) | 57 (18.8) | 122 (40.1) | 88 (28.9)  | 3.85 $\pm$ 0.98               |

Mean Score: 29.01 $\pm$ 4.71

SA: Strongly Agree, A: Agree, N: Neutral, SD: Strongly disagree, D: Disagree

**Table 4.** Medication information needs during pregnancy (n= 304)

| Medication information needs                            | SD f(%) | D f(%)  | N f(%)   | A f(%)     | SA f(%)    | Mean $\pm$ standard deviation |
|---|---------|---------|----------|------------|------------|-------------------------------|
| Health information need on use of safe and unsafe drugs | 4 (1.3) | 6 (2.0) | 22 (7.2) | 118 (38.8) | 154 (50.7) | 4.36 $\pm$ 0.80               |
| Health information need on effects of illegal drugs     | 3 (1.0) | 6 (2.0) | 27 (8.9) | 111 (36.5) | 157 (51.6) | 4.36 $\pm$ 0.80               |

Mean score: 8.72 $\pm$ 1.6

SA: Strongly Agree, A: Agree, N: Neutral, SD: Strongly disagree, D: Disagree

The present study showed that among lifestyle information needs, most of the women (95.7%) wanted to know more about foods they should eat or not during pregnancy which is supported by the study done in Iran (82%).<sup>12</sup> the findings suggest that nowadays pregnant women were more aware to ensure the health of the fetus and so concerned about the lifestyle changes during pregnancy and hence the demand for lifestyle information was fairly high.<sup>13</sup>

**Table 5.** Psychosocial information needs during pregnancy (n=304)

| Psychosocial information need                        | SD f(%) | D f(%)   | N f(%)    | A f(%)     | SA f(%)   | Mean $\pm$ standard deviation |
|--|---------|----------|-----------|------------|-----------|-------------------------------|
| Health information need on emotional changes         | 5 (1.6) | 29 (9.5) | 52 (17.1) | 143 (47)   | 75 (24.7) | 3.84 $\pm$ 0.96               |
| Health information need on effects of domestic abuse | 4 (1.3) | 29 (9.5) | 53 (17.4) | 141 (46.4) | 77 (25.3) | 3.85 $\pm$ 0.95               |
| Health information need on dealing with stress       | 6 (2)   | 25 (8.2) | 59 (19.4) | 137 (45.4) | 77 (25)   | 3.82 $\pm$ 0.98               |

Mean score: 11.51 $\pm$ 2.89

SA: Strongly Agree, A: Agree, N: Neutral, SD: Strongly disagree, D: Disagree

**Table 6.** Perceived health information needs of pregnant women (n= 304)

| Characteristics                                    | Frequency | Percentage (%) |
|--|-----------|----------------|
| Higher information needs (mean score $\geq$ 83.36) | 158       | 52.0           |
| Lower information needs (mean score < 83.36)       | 146       | 48.0           |

**Table 7.** Association between health information need of pregnant women and selected variables

| Characteristics                | Pregnancy Health information needs scale |                              | p-value |
|--------------------------------|--|------------------------------|---------|
|                                | Higher information need f (%)            | Lower information need f (%) |         |
| Age group (In completed years) |  |                              |         |
| < 25 years                     | 90(45.7%)                                | 107(54.3%)                   | 0.003   |
| ≥ 25 years                     | 68(63.6%)                                | 39(36.4%)                    |         |
| Educational Level              |  |                              |         |
| Can read and write             | 11(37.9%)                                | 18(62.1%)                    | 0.045   |
| Primary level                  | 25(48.1%)                                | 27(51.9%)                    |         |
| Secondary level                | 72(52.6%)                                | 65(47.4%)                    |         |
| Higher secondary level         | 50(60.2%)                                | 33(39.8%)                    |         |
| Occupation                     |  |                              |         |
| Homemakers                     | 83(47.2%)                                | 93(52.8%)                    | 0.063   |
| Others                         | 75(58.6%)                                | 53(41.4%)                    |         |
| Trimester                      |  |                              |         |
| First                          | 23(48.9%)                                | 24(51.1%)                    | 0.571   |
| Second                         | 52(56.5%)                                | 40(43.5%)                    |         |
| Third                          | 83(50.3%)                                | 82(49.7%)                    |         |

Most of the pregnant women (82.6%) showed information needs on safe sex. This was in congruence with the study done in Iran (68.5%).<sup>12</sup> But contradicts with the study done in Australia (53%).<sup>13</sup> This difference might be due

to the prejudicial social and cultural perception relating to sexuality which are still entrenched in the mindset of Nepalese women hindering to freely talk about safe sex. This statement is supported by the study done in Nepal.<sup>6</sup>

Most of the women (90.5%) indicated both pregnancy related information need that was to know more health information about the danger sign and development patterns of the fetus during pregnancy which is similar to the findings with the study done in South Western Nigeria (76%).<sup>14</sup> This study findings suggested that the natural desire and curiosity of the women to understand more about the pregnancy process. In contrast to the findings of this study, a study conducted in Australia showed that only (45%) needs information regarding danger signs during pregnancy.<sup>15</sup>

Present study, also found that more than two third (68.8%) of the respondents want to know health information on birth control measures during pregnancy, which is lower than the finding of similar study done in Australia (76%). The main cause for differences in information needs could be due to social stigma and cultural barriers.<sup>15</sup>

This study shows a statistically significant association between pregnancy health information needs and age group (p value 0.003) which is supported by the study done in Nigeria. It suggests that as the age increases the cognitive function or mental abilities tend to increase.<sup>15</sup>

This study established an association between pregnancy health information need and educational level (p value 0.045). This was in congruence with the study done in Iran. This might be due to the fact that when women's educational level is increasing there might be exposed to information regarding pregnancy health and improved critical thinking.<sup>16</sup> The study revealed that there is no significant association between pregnancy health information need with occupation and trimester of pregnancy (p value 0.063 and 0.571) respectively. The result is supported by the study conducted in Ethiopia.<sup>17</sup>

## CONCLUSION

The study showed that the overall health information needs of pregnant women were high and unique to different women. The highest health information needs were found on healthy lifestyle during pregnancy followed by pregnancy related information needs, medication information needs and psychosocial information needs. The pregnant women's health information needs is significantly influenced by the educational level of pregnant women. So health professionals should emphasize in providing quality of health education and counseling during pregnancy to meet optimal health demand of pregnant women.

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# Adjustment of Left behind Spouses of Migrant Worker: A mixed method study

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## ABSTRACT

### Background

Migration for work is a common trend for the Nepalese youth. Basically the factors for migration are found to be political instability, unemployment, poverty and attitude for involvement in hard labor at their own society have been identified. The social health impact on the left behind dependents is not only the problems of Nepalese citizens, but exists globally.

### Objective

To find adjustment status and health risk behavior of left-behind spouses of migrant workers in Sunsari Nepal.

### Method

A community based "Concurrent Quant\_qual" method was used to conduct the study using self-constructed structured interview for collecting quantitative data and in-depth interview with grand tour question to collect lived experiences of respondents. Collected data were analyzed using various descriptive and inferential statistical measures for quantitative and for qualitative, information was transcribed, translated and similar findings were clustered and themes representing each cluster were identified.

### Result

The mean age of the respondents was  $34.4 \pm 7.7$  years. Majority of the respondents (62.5%) had reported good adjustment though 37.5% had poor adjustment. Findings of depth interviews complemented the findings of the quantitative study. Respondents had adjusted with added family responsibility, struggling in nurturing of the children and increased sole responsibility.

### Conclusion

The study concluded that majority had good adjustment; however, more than one third had poor adjustment that needs to be addressed soon.

## KEY WORDS

*Adjustment, Coping behavior, Left-behind spouses, Migrant workers*



## INTRODUCTION

Migration for employment is a common trend for Nepalese youth. In fiscal year 2020, 5,00,000 Nepalese young people leave the country for overseas labor and they are currently working in more than 136 different countries around the world. However this picture couldn't embrace the migrants who migrate illegally and those who cross the open border. Among top ten migrant workers sending districts Sunsari is one of them.<sup>1</sup> Remittances have become a major contributing factor to increasing household income as well as to the national Gross domestic Product (GDP).<sup>2</sup>

The process of migration however, is a transnational phenomenon familial separation may profoundly influence the roles, support structures, and responsibilities of left behind spouse.<sup>3,4</sup> The ways in which people cope is significant factor in determining consequences of life stress on their health. This reality sometimes even get space in the news media, but still the scientific literatures measuring their adjustment and health behavior in terms of left behind spouse are lacking. Poor adjustment status in family may result in adopting ineffective coping strategies with the mental thought to adjust with the circumstances and this finally forces them to adopt unhealthy behaviors. Problems especially the psychosocial ones have been explored only as the tip of iceberg due to social stigma. The ultimate results of the hidden part of iceberg have shown as divorce, separation and adultery relationship.<sup>5</sup> So this study will provide baseline information in Nepalese context, regarding the adjustment status among left behind spouses of migrant worker and their lived experiences and the way their struggling in absence of their husbands.

## METHODS

A community based concurrent Quant\_qual study design was adopted to assess adjustment status among 120 left behind spouse of migrant workers of Dharan from 28<sup>th</sup> December 2017 to May 15, 2018. The quantitative and qualitative data were collected at the same time. Two among ten wards where trends of migration was high were randomly chosen via a lottery method, then key informant was approached to identify the first respondent. Snowball sampling was done to reach to sample who were screened for the eligibility criteria i.e. spousal separation for more than 6 months due to employment. Spouse separated due to other reason were not included in the study.

Ethical clearance Was obtained from Institutional Review Board of BP. Koirala Institute of Health Sciences, Permission was taken from metropolitan office, Dharan and from local administration of ward number 11 and 18. The purpose of the study and procedures was explained and informed written consent was obtained from the participants.

Face to face interview was conducted using pretested structured questionnaires by the researcher herself to

obtain quantitative data. Twelve of the respondents were interviewed purposively until the data saturation was approached. Qualitative data were collected using interview guide in their respective wards in separate room by maintaining confidentiality and comfort of the respondents. All the interviews were audiotaped and later transcribed verbatim.

After the collection of data, it was checked for completeness and was organized, coded and entered in Microsoft Excel and transferred in SPSS 11.5 version. Descriptive statistics (frequency, median, mean, standard deviation and percentage) were calculated. Inferential statistics i.e. Pearson chi-square test was applied to find the association between adjustment and migration related factors. Mainly part three focused the qualitative data; collected information was transcribed verbatim and was translated. Similar kind of verbatim were coded and then later similar codes were brought under broad themes; that is, adjustment and coping behavior interview, and their subthemes.

## RESULTS

Table 1 illustrates that, most of the participants (75.8 %) were in the age group 20-40 years and Mean  $\pm$  SD = 34.4  $\pm$  7.7 years and majorities (74.2%) were Janajati (hill) by ethnicity. Most of the participants had formal education (71.7%), and married (41%) for 10-20 years.

**Table 1. Demographic characteristics of respondent (n = 120)**

| Characteristics                     | Category        | Frequency | Percent (%) |
|-------------------------------------|-----------------|-----------|-------------|
| Age of respondent                   | > 20            | 3         | 2.5         |
|                                     | 20-40           | 91        | 75.8        |
|                                     | More than 40    | 26        | 22          |
| Mean $\pm$ SD= 34.4 $\pm$ 7.7 years |                 |           |             |
| Ethnicity                           | Dalit (Hill)    | 31        | 74.2        |
|                                     | Janajati (Hill) | 89        | 25.8        |
|                                     | Informal        | 34        | 28.3        |
| Education                           | Formal          | 86        | 71.7        |
|                                     | Primary         | 18        | 21          |
|                                     | Secondary       | 57        | 66          |
|                                     | Higher level    | 11        | 13          |
| Duration of marriage                | < 10 years      | 39        | 33          |
|                                     | 10-20 years     | 49        | 41          |
|                                     | 20-30 years     | 28        | 23          |
|                                     | 30 above        | 4         | 3           |

Table 2 depicts that nearly half (49.2%) of the migrant families have debt more than 5 lakhs at the time of data collection. Among them 25% has taken debt to add land or to build home. and Nearly half the of the respondent i.e. 45% of the participants reported that they are getting support from their spouse to clear their debt, and destination

country for majorities (61.7%) of the migrants are Arabic countries like Qatar, Saudi Arabia, UAE and Kuwait followed by other countries.

**Table 2. Social Characteristics of the Respondents (n = 120)**

| Characteristics                                | Categories            | Frequency | Percent |
|--|-----------------------|-----------|---------|
| Family debt                                    | No debt               | 61        | 50.8    |
|  | Significant debt      | 59        | 49.2    |
|  | To go abroad          | 12        | 10      |
| Purpose of debt (n=59)                         | Household expense     | 17        | 14.2    |
|  | For household capital | 30        | 25      |
| Amount of debt (n=59)                          | < 5 lakh              | 26        | 21.7    |
|  | 5-10 lakh             | 15        | 12.5    |
|  | 10-20 lakh            | 13        | 10.8    |
|  | > 20 lakh             | 5         | 4.2     |
| Support from their spouse clearing debt (n=59) | No                    | 5         | 4.2     |
|  | Yes                   | 54        | 45      |
| Country of migration (n=120)                   | Arabian countries     | 74        | 61.7    |
|  | Other countries       | 46        | 38.3    |

**Table 3. Association of Adjustment with migration related factors**

| Category                    | Characteristics         | Above average n(%) | Below average n(%) | Chi-value | p value |
|-----------------------------|-------------------------|--------------------|--------------------|-----------|---------|
| Duration of Migration       | < 5yrs                  | 27(36)             | 20(44.4)           | 2.4       | 0.5     |
|                             | 0.5                     |                    |                    |           |         |
|                             | 5-10                    | 22(29.3)           | 10(22.2)           |           |         |
|                             | 10-15                   | 9(12)              | 8(17.8)            |           |         |
|                             | > 15                    | 17(22.7)           | 7(15.6)            |           |         |
| In- Bound Remittance        | Monthly                 | 51(68)             | 19(42.2)           | 11.3      | 0.004   |
|                             | Every 2-6 month         | 21(28)             | 17(37.8)           |           |         |
|                             | Haven't Sent            | 3(4)               | 9(20)              |           |         |
| Frequency Of Returning Back | Every Year              | 15(20)             | 9(20)              | 0.45      | 0.97    |
|                             | Within 1-5 years        | 33(44)             | 19(42.2)           |           |         |
|                             | Haven't Return/ Missing | 27(36)             | 17(37.8)           |           |         |

The mean score of 8 items in adjustment scale was 1.38 and 62.5% of the participants have good adjustment and more than one fourth have poor adjustment in absence of their husband.

The study also revealed there is significant association between the adjustment and in-bound remittance, however, no any association is found with other migration related factors like returning back and duration of migration.

### Results of in-depth interview

The information that is collected from the in-depth interview was transcribed and was translated and later the similar verbatim from the informant were categorized

in groups and later the theme that represent the cluster of verbatim was derived. And further the derived verbatim were categorized into two board heading i.e Adjustment of left-behind spouse and coping behavior, identified subthemes for the Adjustment were added family responsibilities, difficulty in nurturing of children, Struggling in economic insufficiency, Emotional difficulties, sole responsibility (decision making), subthemes for the coping behaviour were ventilate feelings, use of substance and extramarital affair.

### Adjustment of left-behind spouse

Adjustment of left-behind spouse refers to the additional activities embrace by the left behind wife, that are performed by the husband before they were migrated for the work as well as managing their emotional and psychological adjustment in absence of their partners. After analysis of the information the following theme and subtheme were extracted.

#### 1.1 Added family responsibilities

The most commonly reported household activities were performing all the activities related to outdoors and indoors, and need to manage necessities, receiving remittance, taking the child to school and bring them back. One of the respondents reported that.

"I used to just cook food, I used be engaged in indoor works only and my husband used to manage outside, now I should perform his work as well." (ID6)

similarly other respondent reported that "I need to do his activities as well after his migration, my husband used to complete all the outdoor activities shopping, managing the family business he used to drop children and bring them back after I don't have think extra after he left the house I need to do all the household chores.... need to rush to drop the child to school and bring them back in addition to that I have to visit to bank IME to collect the amount most of the time 3 month and rarely in 6 month and need to go the landlord to reduce the debt its so difficult for me"(ID1)

"The house needs a daughter in-law; I should do all household activities alone, when he was with me he used to help me."(ID9)

#### 1.2 Struggling to nurture children

During the interview, respondents reported that handling and nurturing the children alone and maintaining them in discipline is so hard for the mothers. Especially when children argue and they don't follow the orders but the situation is quite different if they are in joint family, other members in the family control, monitor the children so struggle for nurturing the child seems to be easier to the respondent live in joint family in comparison to nuclear family. However respondent feel difficult when their children inquire regarding their father and expect the

presence of father by comparing with other children. one of the respondents said that.

"I should do everything for my children, they obey me, but sometimes I find it difficult to control them when they disregard me, at that time I feel it would be easier if my husband was with me". (ID2)

Similarly other respondent reported that "It is tough job to nourish the child alone, but what to do..... any way other members of family help me to see after my children, in absence of my husband they provide more affection". (ID5)

### 1.3 Struggling in economic insufficiency

Almost all the respondent agreed that day by day daily life is getting expensive and their expectation has not met and for most of the respondent the amount sent by their spouse is not enough for household chores and clearing the debt while few of the respondent verbalized that they could invest in land. Expressing the economic insufficiency respondents reported that,

"The money sent by my husband ends up in spending for household activities, tuition fees for children, and the amount is not enough to run family affairs so sometimes, I feel distressed." (ID1)

"The problem of money is solved by consulting each other, I report him where the amount will be spent, but sometimes I should clear the loans and on a same time I need to spend in something unusual situation which I was not expected." (ID4)

Similarly other respondent reported that my husband sent me the fixed amount of money in regular basis the amount is not enough, when money lenders visit and demand for the total amount, and the way they behave to make me feel that its worthless to move by taking loan." (ID7)

### 1.4 Sole responsibility

During the interview all the respondent reported that they need to perform the left-out activities of their spouse though the extent of activities might differ as per the type of family however the respondents who live in nuclear family need to complete all the activities that were supposed to be performed by their spouse, during the interview one of the respondents expressed her overburden's she stated "All household activities should be performed by myself, nurturing the children to everything. At present my husband just sends money." (ID1)

Similar feeling is expressed by the next respondent that, "He just sent the amount of money that he thinks its adequate but I need the divide the amount spent accordingly." (ID8)

### 1.5 Emotional difficulty

Majority of the respondents reported that its so difficult to stay apart, this difficulty increases when they were suspiciously overlooked by their owns and when other family members do not support the respondents in

their daily activities. Expressing her emotion one of the respondent reported that.

"My family members and neighbors are illiterate, our thinking doesn't match that makes it difficult, they see everything in a negative way, if I go anywhere, they are so concerned that I don't like it." (ID9)

Similarly other respondent reacted that " we often used to go outside when we were together and no one used to question regarding our outing but now when I go for my family business my neighbors puts so many questions I don't like that." (ID4)

Respondents were also explored for their coping behavior by asking them how they manage all this difficulty and overburdens in absence of their spouse, behavior extracted were increased in social networking, intake of excessive amount of alcohol, and risky sexual behavior.

## 2. Coping behaviors of left -behind spouse

The respondents expressed that if they have any difficulty, they contact their maternal relatives and their friends. Respondents who have good networking with their partner and family support cope the difficulty in the positive way, whereas few of the respondents reported that they satisfy themselves by using alcoholic products. Very few accepted that they are trying to find the companion with whom they can share their feelings. Themes that were extracted for the coping behavior were ventilate the feelings, use of alcohol, extramarital affairs.

### 2.1 Ventilate the feelings

Most of the respondents ventilate their feelings via the mobile phone and internet and commonly used social media is IMO. During the interview one of the respondent stated "If I have any problems may it be related to house or other I just share with my husband, now a days internet has made the distance closer most of the time we will talk with each other in a day we almost spend 2-3 hours in IMO." (ID5)

Similarly other stated that "If I have any problem I will talk with my parents, I think he has his own stress abroad so i don't want to add to his stress even if I told him he couldn't do anything." (ID2)

### 2.2 Drink alcohol

Drinking alcohol was taken as one of the coping strategy during their difficult time by the respondents during the interview session one of the respondents " stressed ....I drink a bottle of beer to relax myself then only i have sound sleep." (ID10)

Similarly other stated that "If I feel restless I make a call in my friend circle. I spend time with them. We sit together, have fun." ID9

### 2.3 Extra marital affair

Respondents who didn't receive the support from their

husband were found to be engaged in extramarital affair and even seem to have unsafe sexual practice one of the respondent stated that "My husband doesn't show much concern i am m\staying with my parents i have partner and am in relation with him he bears all my personal expenses. ID2

### Integration of quantitative and qualitative findings

Quantitative finding revealed that 62.5% of the respondents were well adjusted to the left behind responsibilities that were shifted to them after the migration of their spouse. This finding is complemented by the qualitative findings that majority of the respondents living separately from in-laws reported that they need to carry out the sole responsibility of nurturing family, allocation of the remittance in different sectors like for food, tuition fee of children and few respondents even needed to reduce their financial expenditure for clearing the left behind debt. However regarding handling of family finances, in joint family, financial issues are handled by their in-laws. Similarly quantitative study suggested that majority of the respondents (77.5%) received family support (maternal side) even in absence of their spouse. This findings is supported by the findings from the qualitative finding that most of the respondents had emotional difficulty when they had to stay apart from their partner and during difficult times, they ventilate their feeling with their parents. In addition to that, 15% of the respondents reported that they were not satisfied with the behavior and attitude of the family members. This findings is more enlightened by the qualitative findings that specially the respondent who live in joint family felt overburdened with the roles and responsibilities and instead of receiving support from family members when they were suspiciously overlooked in each activities in absence of their partner. Findings from the quantitive analysis revealed that 37.5% of respondents have poor adjustment the information from qualitative further enlighten that these respondents could adjust in their home town with all added responsibilities if they receive support from other family members and periodic contact via social media with their migrated partner and continuous financial support from the migrated country i.e remittance to left behind partner. Those respondents who lacked contact with their partner, did not receive inbound remittance and were not satisfied with the attitude of their relatives and closed ones, had poor adjustment. As coping measures, majority reported that they took alcoholic drinks and very few were found to engage in extramarital relationship.

## DISCUSSION

The current study has made attempt to investigate the status of adjustment in the family, may be the first study in Nepal, trying to measure the adjustment in left- behind spouses of migrated men for work. The study reflects that

significant percentage of respondent i.e 62% have more than average level of adjustment. The result of thematic analysis also showed that the left behind spouses has to perform sole responsibility and they feel autonomous in absence of their husbands this finding is supported by the study conducted in Sri Lanka which showed that left behind spouse may have role responsibility in handling family finances in absence of husbands.<sup>6,7</sup> Similarity in the finding might be due to the circumstances that in absence on partner there is shift of responsibilities to other one.

In the current study, 32% of the respondent have less than average adjustment in absence of their partner. This put them at increased risk of stress specially, when they have debt more than equal to five lakh, and if they fail to get enough remittance from their husbands to clear the debts. The adjustment status was found significantly associated with the inbound remittance with p value 0.004. Furthermore, qualitative information suggested the same. Respondent who Fail to receive the enough amount of remittance feel stressed of clearing their debt. One of the respondent reported that "Husband just send me the amount that he estimate is enough and his estimation of expense is just enough for hand to mouth but I need to clear the debt taken during the migration process I feel guilt of taking the loan when I have to face misbehave from the lenders. This finding is supported by the findings from male migration and women's life evidence from Nepal.<sup>8,9</sup>

The qualitative findings in study revealed that remarkable proportion (58%) reported use of alcohol as a coping behavior during their stress in absence of their partner. This finding might be due the prevalence alcohol intake in Sunsari is high as per the study done in community setting study of alcohol in Eastern Nepal.<sup>10,11</sup>

The findings from qualitative data offers few of the respondents were involved in extramarital relationship and ventilate their problems with their new partners in absence of their spouse. This finding is supported by the study conducted in Armenia suggested STD risk in left behind spouse is modulated by income.<sup>12</sup> In-depth interview revealed that almost all the respondents need to perform in the left behind responsibilities like managing daily economic affairs, clearing the debts, caring and rearing of the children. And all the left behind spouse are dependent in remittance send by their husband. There is significant association between the adjustment and in-bound remittance. This finding is consistent with the findings published in effects of migration and remittance on agriculture yield.<sup>13</sup>

## CONCLUSION

This study gives a picture of the current status of adjustment of left behind wives of migrant workers .At present, husband working abroad is one of the emotional difficulties for left-behind spouse though majority of the

spouse have more than average adjustment. Majority of the left behind spouse were found to use substances like alcohol to cope with stress arising during the absence of their husband and lack of support system and less communication with the left behind spouse are the reason for involvement in extramarital affair. The study showed

that there is significant association between the adjustment and in-bound remittance irrespective of the perceived relation with husband and other migration factors so the adjustment status of left - behind spouse depends upon appropriate support from the partner in clearing.

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