

Experiences of menstrual exiles (Chaupadi) and its consequences among women in Nepal

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ประสบการณ์การอยู่แยกจากครอบครัวระหว่างการมีประจำเดือน (โชนาปาดิ)

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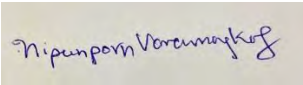
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ความเป็นมา: สุขอนามัยระหว่างการมีประจำเดือน มีผลต่อสุขภาพของผู้หญิงและคุณภาพชีวิตโดยรวม
วัฒนธรรม “โชวาปาดิ”

เป็นรูปแบบการอยู่แยกจากครอบครัวระหว่างการมีประจำเดือนที่ได้รับการปฏิบัติมายาวนานหลายชั่วอายุคนในภ
คตะวันตกของประเทศเนปาล “โชวาปาดิ” ส่งผลต่อความเสี่ยงด้านสุขภาพหลายประการ
รวมถึงปัญหาสุขภาพจิตในระยะยาวและการเสียชีวิต การศึกษาปัจจัยที่มีอิทธิพลต่อการปฏิบัติตามวัฒนธรรม
“โชวาปาดิ” จะเป็นประโยชน์ต่อการกำหนดนโยบายในการยกเลิกการปฏิบัติดังกล่าว **วัตถุประสงค์:**

วัตถุประสงค์ของการศึกษาในครั้งนี้ เพื่อสำรวจประสบการณ์การอยู่แยกจากครอบครัวระหว่างการมีประจำเดือน
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13-49 ปี จำนวน 340 คน ที่อาศัยอยู่ในเขตเทศบาลกฤษณปุระ อำเภอกาญจนปุระ ประเทศเนปาล
โดยการสำรวจด้วยแบบสอบถาม

การวิเคราะห์ข้อมูลได้ใช้สถิติเชิงพรรณนาและการวิเคราะห์การถดถอยโลจิสติกแบบไบนารี เพื่ออธิบายสถานการณ์
ผลกระทบที่เกิดขึ้น และวิเคราะห์ความสัมพันธ์ระหว่างปัจจัยต่างๆ กับการปฏิบัติ “โชวาปาดิ” **ผลการศึกษา:**
การศึกษาพบว่าสามในสี่ของผู้ตอบแบบสอบถามมีการปฏิบัติตามวัฒนธรรม “โชวาปาดิ” คือ
การอยู่แยกจากครอบครัวระหว่างการมีประจำเดือน ผู้หญิงส่วนใหญ่มีความรู้ในระดับต่ำ (71.5%)
มีทัศนคติในระดับปานกลาง (71.8%) การอยู่แยกจากครอบครัวระหว่างการมีประจำเดือน (โชวาปาดิ)
มีความสัมพันธ์กับกับอาชีพ ($p = 0.018$) ระดับการศึกษา ($p = 0.039$) ความพร้อมใช้งานของห้องน้ำ ($p = 0.003$)
บุคคลที่มีอิทธิพลต่อการปฏิบัติโชวาปาดิ ($p = 0.011$) และผู้มีอำนาจตัดสินใจสำคัญในครอบครัว ($p = 0.027$)
ผลการศึกษายังพบว่า ผู้หญิงที่ปฏิบัติตัวอยู่แยกจากครอบครัวระหว่างการมีประจำเดือน

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สรุป: แม้ว่าการอยู่แยกจากครอบครัวระหว่างการมีประจำเดือน (โชวาปาดิ) เป็นสิ่งต้องห้ามทางสังคม
แต่ยังคงมีการปฏิบัติอย่างแพร่หลายแม้ในเขตเมืองของประเทศ

กิจกรรมที่กำหนดเป้าหมายเพื่อปรับปรุงความรู้ทางสุขภาพของผู้หญิงรวมถึงอนามัยวัยรุ่นที่เป็นองค์ประกอบบ
งคับในหลักสูตรของโรงเรียน จะสามารถช่วยสนับสนุนการยกเลิกการปฏิบัติตามประเพณีนี้ได้

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SMRITI LAMA: Experiences of menstrual exiles (Chaupadi) and its consequences among women in Nepal. Advisor: MONTAKARN CHUEMCHIT, Ph.D.

Background: Menstrual hygiene affects women’s health and overall wellbeing. “*Chaupadi*”, a form of menstrual exile (ME), has been practiced over generations in western parts of Nepal. Chaupadi is associated with various health risks including long-term mental health problems and even deaths. Identifying the factors that influence the practice of Chaupadi will inform the policymakers and the key decisionmakers in the community to abolish the practice. **Objective:** The objective of the study was to explore the experience of Chaupadi and its consequences among women in Nepal. **Methods:** A cross sectional study was conducted among 340 women aged between 13-49 years of age residing in Krishnapur municipality of Kanchanpur District of Nepal by survey questionnaire. Descriptive statistics and binary logistic regression were used to analyse the situation, consequences, and its association of Chaupadi practice. **Result:** The study found that three fourth of the respondents experienced seclusion during menstruation. Most of the women showed a low level of knowledge (71.5%) while a higher proportion of them had a neutral attitude (71.8%). ME is associated with occupation ($p=0.018$), level of education ($p=0.039$), availability of toilet ($p=0.003$), person influencing Chaupadi ($p=0.011$) and key decision makers in the family ($p=0.027$). Women during ME face various social, physical and health related consequences. **Conclusion:** ME is a social taboo that is still prevalent even in urban areas of the country. Targeted activities to improve the health literacy of women including adolescent health as a mandatory component in the school health curriculum could help support early abolishment of the tradition.

Department : Public Health

Student’s Signature...



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Smriti Lama

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Abbreviations

AP	Ayurvedic Practice
ANM	Auxiliary Nurse Midwives
DoHS	Department of Health Services
EU	European Commission
FCHV	Female Community Health Volunteer
GDP	Gross Domestic Product
HA	Health Assistant
MCHW	Maternal and Child Health Worker
MDG	Millennium Development Goals
ME	Menstrual Exile
MHM	Menstrual Hygiene Maintenance
MoHP	Ministry of Health and Population
MP	Municipality
NGO	Non- governmental organizations
INGO	International non-governmental organizations
OCI	Objective Congruence Index
PPS	Proportionate to size
SD	Standard Deviation
SDG	Sustainable Development Goals
UTI	Urinary Tract Infection
VHW	Village Health Worker
WHO	World Health Organization

CHAPTER 1

1.0 Introduction

1.1 Background and Rationale

World Health Organization (WHO) defines health as “*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*”, which is further elaborated by George L. Engel by indicating that any cause or outcomes related to illness and disease is attributed largely to the interactions that occur between biological, psychological and the social factors (Bolton & Gillett, 2019; WHO, 2000). Often it has been seen that social factors including cultures play a significant role in bringing adverse health outcomes. Over the last few decades Nepal has made substantial progress in achieving the health-related targets especially in the sector of maternal and child health. Increased immunization rates and decreased mortality rates of women and children below the age of 5 years is the indication that the health care system of the country is functioning well and the country is on course to achieving the set targets as defined in the MDG and SDGs (Adhikari, 2016). Despite the marked progress, the health of women and children in rural Nepal is often compromised due to various factors including lower socioeconomic status, lower literacy levels, employment, distribution of health care facilities with adequate human resources and quality service delivery, persistent religious and traditional taboos which result in women being secluded from exercising their rights to nutritious food and safe living environment (Kabir, Maitrot, Ali, Farhana, & Criel, 2018).

Social and environmental factors play a very critical role in the health and wellbeing of an individual or community (Mangum & Mangum, 2018). Often it has been seen that social factors including cultures play a significant role in bringing adverse health outcomes (Lowe, Chen, & Huang, 2016). Women and children are those suffering the most

adverse outcomes in a household. This is often due to an existent patriarchal society where males exercise higher authority within the households in making key decisions including health related decisions (Osamor & Grady, 2016).

Menstruation is a normal physiological process wherein periodic, normal and healthy expulsion of tissues with blood from the uterus through the vagina is regarded as the start of womanhood and often occurs in all females during the period of adolescence and is one of the key indications of reproductive health as well as preparedness of women for pregnancy (Kadariya & Aro, 2015). It is observed that during menstruation period, girls and women often experience extreme mood swings as a result of the hormonal imbalance, thereby, resulting in unnecessary mental health problems (Timilsina, 2018). Adding to these biological effects, social seclusion, stress, and compromised living conditions with poor menstrual hygiene during this phase every month is bound to bring about adverse effects on health and overall wellbeing. Lack of hygiene maintenance during menstruation often leads to increased risk of urinary tract infections and poor reproductive health for women (Upadhyay, 2018).

Seclusion of women during their menstrual period from regular activities and prayers has been practiced over centuries, across several religions, geographical areas and with a variance in the level of intensity. Seclusion during menstruation is still prevalent throughout Western parts of Nepal, in particular, the Karnali and Sudurpaschim provinces. The said menstrual exile or seclusion takes the form of “*Chaupadi*” a social and cultural taboo that is practiced by women in these regions which predisposes them to various health risks such as long-term mental health problems including depression. There are even deaths that have resulted due to the practice.

A literature search using the key word ‘*Chaupadi*’ or ‘*Chhaupadi*’ on Google scholar, PubMed and Scopus revealed only four studies done on the practice in Sudurpaschim Province. Those studies were done in rural villages of Achham, Doti and Kailali districts of Sudurpaschim Province and were limited to adolescent population and

menstruation. Furthermore, the search did not yield any study on morbidity and mortality as well as in the urban setting.

The aim of this study was to fill in some of the above identified research gaps. This study elaborates the characteristics and practice of *Chaupadi* during menstruation and post-partum among women of all reproductive age groups in migrated Achammi women in Urban municipality of Kanchanpur district, Sudurpaschim province.

1.2 Research Questions

- 1.2.1 What are the demographic and economic characteristics, sociocultural characteristics, knowledge on menstruation, menstrual hygiene management and law, attitude towards *Chaupadi* (Menstrual exile), experiences of *Chaupadi* (Menstrual exile) and its consequences among women in Nepal?
- 1.2.2 Is there any association between demographic and economic characteristics and *Chaupadi* (Menstrual exile) experiences among women in Nepal?
- 1.2.3 Is there is any association between sociocultural factors and *Chaupadi* (Menstrual exile) experiences among women in Nepal?
- 1.2.4 Is there is any association between knowledge on menstruation, menstrual hygiene management, existing law, attitude towards *Chaupadi* (Menstrual exile) and *Chaupadi* (Menstrual exile) experiences among women in Nepal?
- 1.2.5 Is there is any association between attitude and *Chaupadi* (Menstrual exile) experiences among women in Nepal?
- 1.2.6 Is there any association between *Chaupadi* (Menstrual exile) experiences and consequences among women in Nepal?

1.3 Research Objectives

1.3.1 General Objectives

To examine the experiences of *Chaupadi* (Menstrual exile) and its consequences among women in Nepal

1.3.2 Specific Objectives

1.3.2.1 To determine the rate of *Chaupadi* (Menstrual exile) experiences among women in Nepal

1.3.2.2 To examine the consequences of *Chaupadi* (Menstrual exile) experiences among women in Nepal

1.3.2.3 To describe the demographic and economic characteristics, sociocultural characteristics, knowledge on menstruation, menstrual hygiene management, existing law, attitude towards *Chaupadi* (Menstrual exile), *Chaupadi* (Menstrual exile) experiences and its consequences among women in Nepal

1.3.2.4 To identify the association between the demographic and economic characteristics, sociocultural characteristics, knowledge on menstruation, menstrual hygiene management, existing law, attitude towards *Chaupadi* (Menstrual exile), *Chaupadi* (Menstrual exile) experiences and its consequences among women in Nepal

1.3.2.5 To identify the association between *Chaupadi* (Menstrual exile) experiences and consequences among women in Nepal

1.4 Research Hypothesis

1.4.1 Null Hypothesis

There is no association between the between the demographic and economic characteristics, sociocultural characteristics, knowledge on menstruation, menstrual hygiene management, existing law, attitude towards *Chaupadi* (Menstrual exile), *Chaupadi* (Menstrual exile) experiences and consequences among women in Nepal

1.4.2 Alternative Hypothesis

There is association between the demographic characteristics, sociocultural characteristics, knowledge on menstruation, menstrual hygiene management, existing law, attitude towards *Chaupadi* (Menstrual exile), *Chaupadi* (Menstrual exile) experiences and consequences among women in Nepal

1.5 Operational Definitions

1.5.1 Demographic & Economic Characteristics

- Age: Age (in years) at last birthday. In this study, women of reproductive age group (13-49 years old).
- Ethnicity: The categories for ethnicity were adopted from the ‘caste/ethnic groupings’ in Nepal’s Health Management Information System (Bennett, 2008). Based upon it, this study consists of Brahaman/Chhetri, Adivasi/Janajatis, Dalits, Tarai/Madhese other castes, Muslim, and others under the ethnicity.
- Religion: The religion is the belief or faith that an individual show and is categorized into Hindu, Islam, Buddhist, Christian or others.
- Occupation: This refers to the current (or most recent) form of employment. It is divided as agriculture, migrant worker, business, labor, employee, or others.
- Marital status: Marital status is defined as the current status of marriage (refers to both culturally and/or legally married) and divided as single, married, divorced/separated or widowed.
- Level of Education: This is defined as the highest level of education attained by an individual which has been categorized as primary, secondary, higher secondary education; undergraduate; postgraduate and above; literate- able to read and write; literate- able to read only or Illiterate.
- Family Income: The total monthly income of the bread earner of the household and is a numerical value. In Nepalese currency (Rupees) i.e. Nrs.

- Type of family: The composition of the family members, who have a relationship with each other, living in the same household. The family type could be a nuclear family or an extended family with several generations living together under one roof.
- Size of family: It is the number of individuals living within a family unit under a household. It is a variable that indicates the total number of males and females living in a particular family.
- Availability of toilet facilities during Menstruation: Provision of toilet use or access during menstruation.
- Distance of toilet from *Chaugoth*: It is the distance of toilet from the place of menstruation exile (ME) (indoors/ outdoors from *Chaugoth*) which will be reported as less than 15 meters or more than 15 meters to check the feasibility of toilet.
- Menstrual Exile/ *Chaupadi*: It is the seclusion of women from family and society during their menstruation
- Existing law: The law which punishes people who practice or force others to practice *Chaupadi* / ME

1.5.2 Sociocultural Characteristics

- Decision maker in the family: This is the main decision maker within a family and could be the husband, the in-laws or the woman (respondent) herself depending upon the composition of the family.
- Breadwinner in the family: It is the person who earns money to support the family i.e., spouse, parents, In-laws, other guardians or the women themselves.
- Pressure from husband/ older members of the family: *Chaupadi* practice due to pressure from husband older members of the family including in-laws.
- Traditional beliefs: This refers to the traditional views of the individual, spouse, family and society on menstruation.

1.5.3 Knowledge variables

- Knowledge about Menstruation: It refers to the ability of a person to understand and respond correctly about menstruation and knowledge on right age of onset of menstruation
- Knowledge on menstrual hygiene management: This refers to knowledge on proper cleanliness to be maintained during menstruation including the use and disposal of sanitary pads.
- Knowledge on existing law: This is the level of knowledge of the persistent laws of Nepal that punish the practice of *Chaupadi*.

1.5.4 Attitude towards *Chaupadi*

- This is the opinion of women on *Chaupadi* as a tradition, the existing law, and its impact on health. This is reported via Likert scale having 5 responses- Strongly agree, agree, neutral, disagree and strongly disagree where the statement can be both negative and positive.

1.5.5 Variables on Menstruation:

- Average no. of days in a menstrual cycle: It refers to the average number of days each menstrual cycle lasts every month.
- No. of days secluded during menstruation: This is the number of days the woman is kept in seclusion depending on the no. of days the menstrual cycle lasts.
- Menstrual Hygiene Management: It refers to the access to the menstrual hygiene products to absorb or collect menstrual blood, privacy to change the materials, and access to facilities to dispose of used menstrual management materials.

1.5.6 Dependent Variables

- **Chaupadi Experiences:** It refers to the practice of *Chaupadi* in which menstruating girls and women are exiled or made to stay secluded from the family inside or outside in a small hut/cow shed and even not allowed to cook or eat inside the house.

- **Consequences:**

The effects of *Chaupadi* practice in terms of following factors:

- Social consequences: Prohibition from participating in social functions, festivals and worshipping deities, Lack of access to hygiene and sanitation facilities, Absence from daily chores: School absence/work absence
- Physical consequences: Physical abuse, Sexual abuse, Animal attacks, Problems due to hot/ cold weather, Theft
 - Health consequences: Physical health: Headache, Diarrhea, back pain, fever, urinary tract infection (UTI); Mental health: Sleep disturbance, lack of interest, loneliness, irritation ; Skin problems: Dry skin, Itch and rashes

1.6 Conceptual Framework

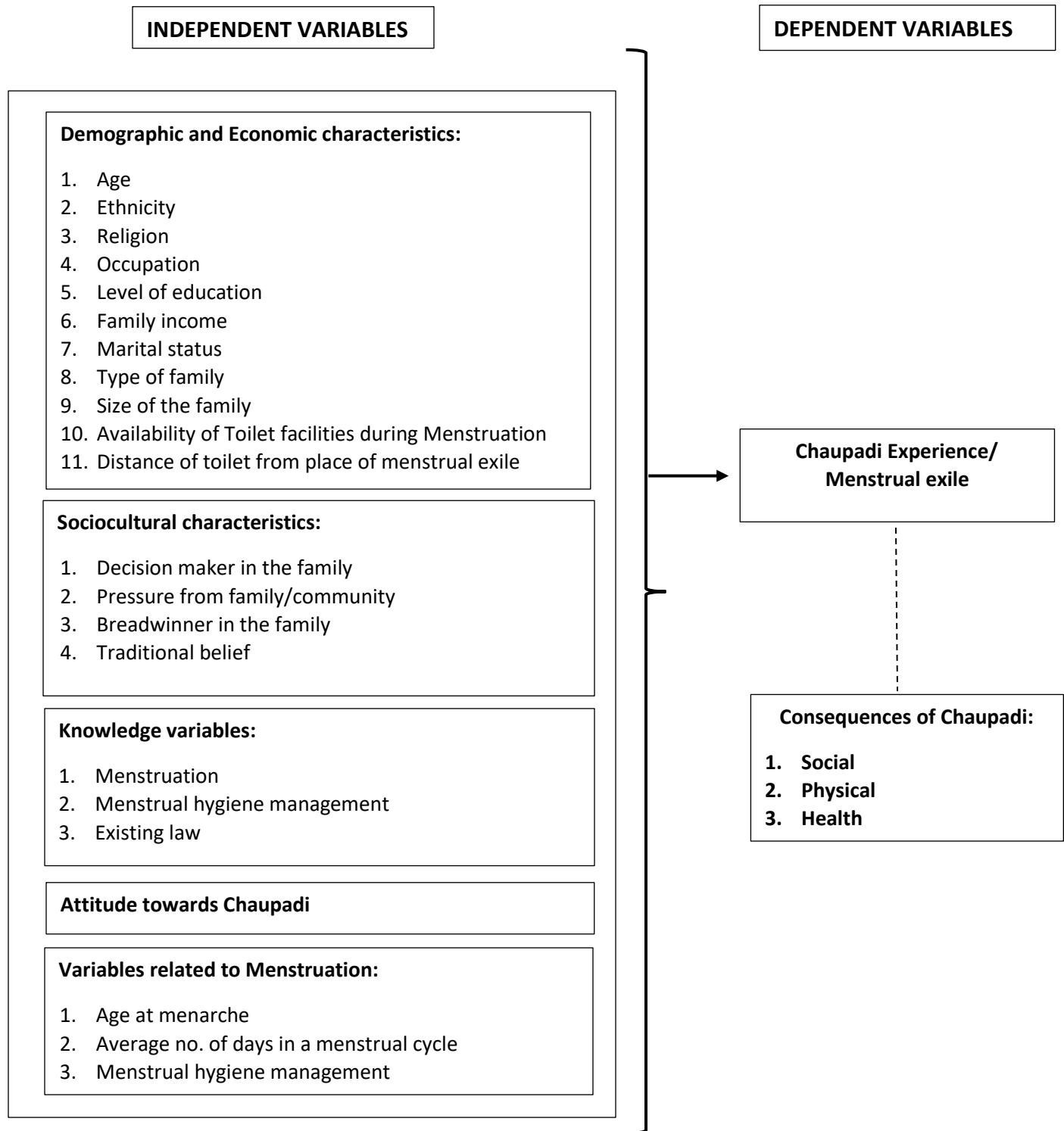


Figure 1: Conceptual Framework

CHAPTER 2

2.0 Literature Review

2.1 Nepal an overview

Nepal is a landlocked country that lies in the heart of South Asia. Bordered by India in the South, East, West and China in the Northern Himalayan boundary, the country has a total area of 147,181 square kilometers (Statistics, 2012.). Furthermore, the country is ecologically into three separate regions: the Mountains region in the North (between 4877 and 8848 meters above sea level), the middle Hills region (from 610 to 4876 meters above sea level) and the plain Terai region in the South (between 58 and 609 meters above sea level). The Mountain region covers 35% of the total land area, while the Hills and the Terai constitute 42% and 23% of the total areas, respectively. Nepal used to be divided into developmental regions in the past: Eastern, Central, Western, Mid-Western and Far Western, however, after the federalization it has been divided into 7 Provinces, 77 districts and 753 Rural and Urban Municipalities (Pandey et al, 2018). The municipalities are the lowest governing administrative units in the country and are further divided into wards (Figure 2).

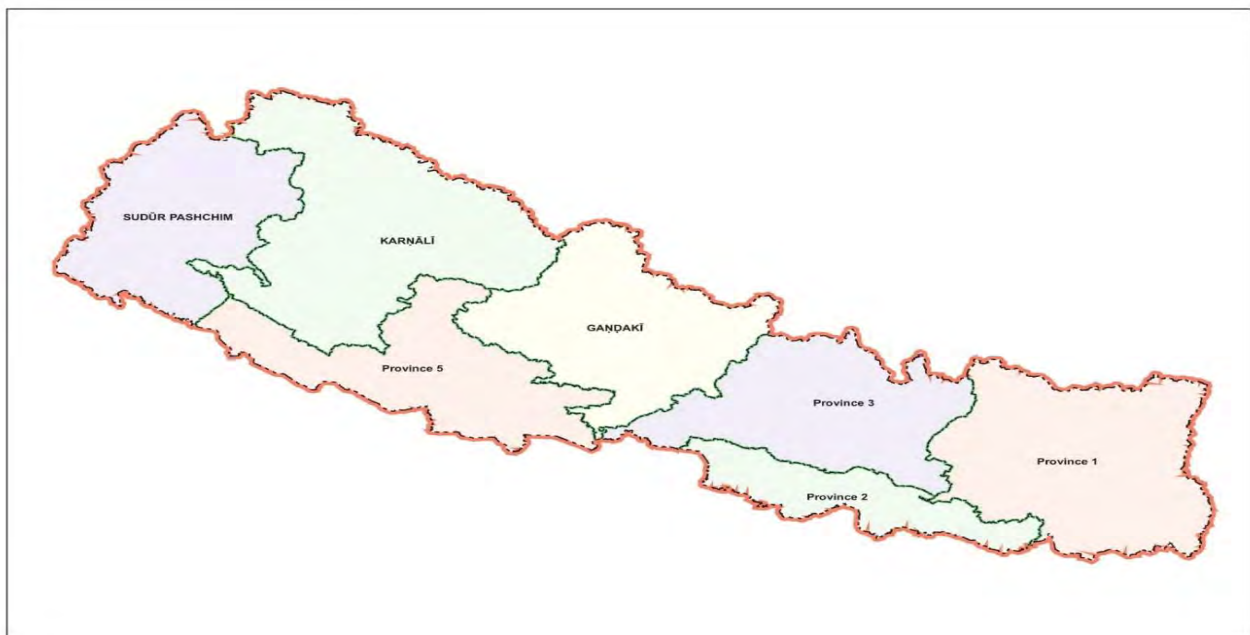


Figure 2. Map of Nepal showing the seven provinces (source: www.dos.gov.np)

Nepal is predominantly a Hindu country with more than 81% following the religion while people following other religions such as Buddhism (9%), Islam (4.4%), Kirat (3.1%), and Christianity (1.4%) also are well dispersed within the population living in perfect harmony (Central Bureau of Statistics, 2012). Although Nepalese is the official language spoken all over the country, due to numerous ethnic groups present in the country, many other local languages are also spoken all over the country. Altogether there are more than 125 different ethnic groups and castes identified in the country speaking their own languages. While Brahmins and Chhetris the supposed higher castes according to the Hindu mythology constitute a major 28.8% of the population, other castes such as Magars (7.1%), Tharu (6.6%), Tamang (5.8%), Newars (5.0%), Kami (4.8%) are also common in the country (Central Bureau of Statistics, 2012). Despite the caste system being legally abolished by the government, there is still a persistent discrimination between the castes in the Nepalese society. Often the people of lower caste are ostracized by the supposedly higher castes in the name of religion and this deprives the later from easily accessing even basic rights such as education, employment and health care (Jones & Boyd, 2011).

Nepal is a low income country with the per capita gross domestic product (GDP) for Nepal in 2009-2010 stood at Nepalese rupees 41,875 (approximately US\$ 450) with one fourth of the population is still hovering below the poverty line (Ministry of Health and Population, 2012b). Furthermore the total expenditure in health care which stands at more than 5.5 % of the GDP (Ministry of Health and Population, 2012a). GDP growth is projected to average 6.5 percent over this and next fiscal year, backed by strong services and construction activity due to rising tourist arrivals and higher public spending (T. W. Bank, 2018).

According to the 2011 census, Nepal has a total population of 26.5 million out of which 61.6% of them were females within the age group of 15—64 years. The total population of Western Nepal is around 10 million out of

which 53% are females. Similarly, the total population of Sudurpaschim Province (SPP) which has highest practice of *Chaupadi* is 2.25 million (9.6% of total population of Nepal), among which the female population is 52% (Statistics, 2012.). In Sudurpaschim Province, 95% of the women of Achham district alone were practicing this *Chaupadi* culture according to reports published by the UN in 2011 (United Nations [UN] Resident and Humanitarian Coordinator's Office, 2011). Achham district has a total population of 241,590 while Doti is less with 206,915 population. While the latter two are hilly districts, Kanchanpur is mostly in the plains with some rural municipalities in the low hills. Kanchanpur comparatively urbanized, large and has a denser population (451,248) compared to the other two (Statistics, 2012.). This is largely due to migration of people from the remote hilly districts including Doti and Achham in search of work and agricultural opportunities.

2.2 Health System of Nepal

The overall purpose of the Department of Health Services (DoHS) under the Ministry of Health and Population (MoHP) is to deliver preventive, promotive and curative health services throughout the country. As seen in Figure 3., the organizational structure of the MoHP outlines how different levels of the health care system relate to each other in the form of a health care network under the DoHS.

Altogether there are a total of 4396 health institution under the MoHP at present out of which 94 are hospitals, 207 primary health centers, 1689 health posts and 22127 sub health posts and 293 Ayurvedic health facilities (Ministry of Health and Population, 2012a). Health personnel ranging from doctors, nurses/ Auxiliary Nurse Midwives (ANM), paramedics/ Health Assistants (HA), Village Health Workers (VHW), Maternal and Child Health Workers (MCHW) and Ayurvedic Physicians (AP) provide health care services in these facilities. The government initiated the female health care volunteers (FHCV) program in the early 1980s and there are currently more than 50000 of

these volunteer women actively involved in providing health education, basic health care, immunization and referral of cases to nearby health centers (Glenton et al., 2010).

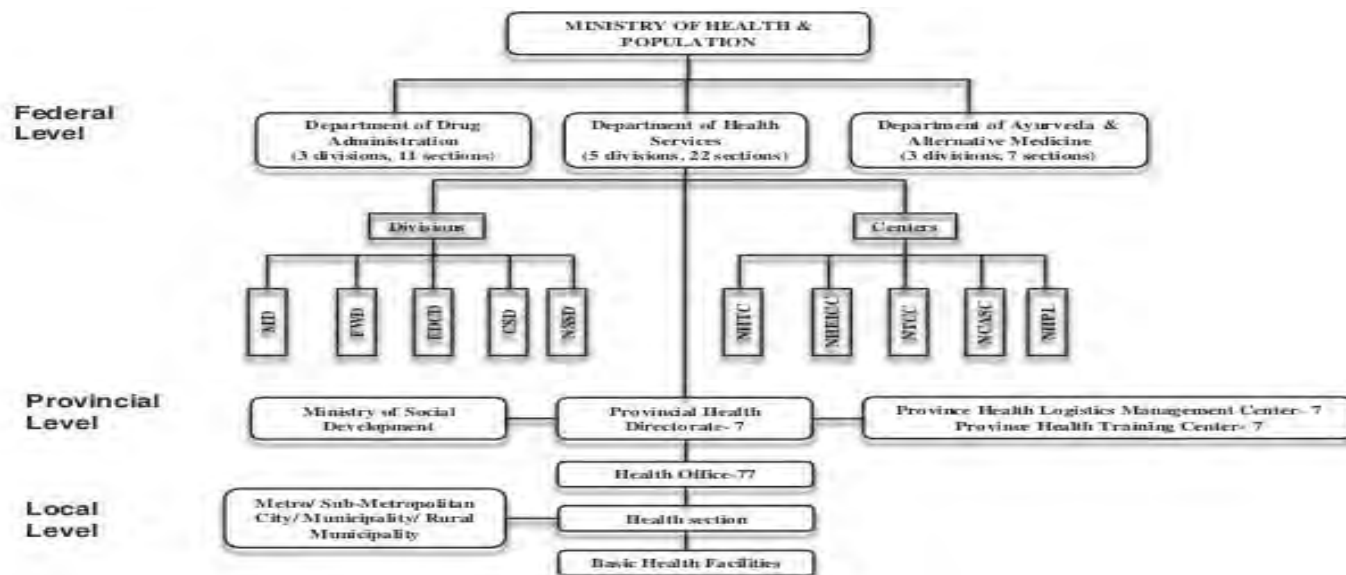


Figure 3. Organogram of the Ministry of Health and Population

2.3 Menstruation: A milestone

Globally, approximately 50% of the total population are females (W. Bank, 2019). Most of these women and girls undergo a menstrual cycle each month for a period of two to seven days. Menarche or the onset of menstruation is an important physical development milestone for all females. Menarche is found to occur two to three years after puberty in most females and is commonly seen to occur in between the age of 9-15 years of age with individual variation. Menstruation is a normal physiologic process where the uterus releases periodic, normal and healthy expulsion of tissues along with blood through the vagina. This is regarded as the start of womanhood and takes place often in all the females during the period of adolescence indicating reproductive health as well as the preparedness of the female to become pregnant (Kadariya & Aro, 2015). Due to hormonal imbalance, girls and women often experience extreme mood swings even at times resulting into unwanted mental health problems (Timilsina, 2018) In addition to the regular internal biological effects; other conditions such as social seclusion,

stress and adverse living conditions with poor menstrual hygiene during this phase each month is bound to bring about adverse health effects and overall wellbeing of women. Lack of hygiene maintenance during menstruation often leads to increased risk of urinary tract infections and poor reproductive health for women (Upadhyay, 2018). Although menstruation in itself is not a disease, however, improper management of this condition may result in other health problems and this can further be compounded by social, cultural, and religious practices persistent in the society.

Seclusion of women during their menstrual period from regular activities and prayers is practiced over the centuries, across several religions, geographical areas and with a variance in the level of intensity. In the early days, the Romans believed that women during their menstrual period would have the evil power of turning a wine sour, affect the plants and fruit bearing trees if touched such that they would go bad. The Jews also bear the same sentiments with various body parts of women such as nail clippings, footprints, spit and even breath were deemed to be evil and would be passed on if touched. The Muslims do not pray, take fast, or even have sex during menstruation and touching the Koran is also prohibited during the cycle (Bharadwaj & Patkar, 2004). Menstruation is very complex within Hinduism. While some Hindus convene celebration at the onset of menarche, while for others menstruation still carries the stigma of dirtiness and impurity. The extent of which these females are separated vary from country to country (Lowe et al., 2016).

A case of extreme separation has been reported in an ethnographic study done in 1988 seen among the Indonesian Huaulu Communities of Seram island where women are kept in separate huts at the edge of the village (Hoskins, 2002) while a less severe form was found in a longitudinal study where a separate hut nearby the main house like those for the Dogons community, a millet-farming population who live in Mali, West Africa (1986-1988, 1994) (Strassmann, 1995). The farther isolated a hut is from the community increases the risk of females to abuse and

attacks. In low income countries such as Kenya and Tanzania, where there is lack of proper sanitary facilities in schools and girls often taught that menses is a private to-be hidden subject leads to absences in schools (McMahon et al., 2011). Furthermore, a mixed-method study done in 2016 at a slum in Nairobi, Kenya among women of 11 villages shows that insecure toilet facilities in various public settings also result in sexual assault and harassment to girls (Winter, Dreibelbis, Dzombo, & Barchi, 2019) (Amnesty, 2010).

The persistent feeling of fear and shame among women during their menstrual period can influence the mental health of the individual leading to decreased self-confidence and depression in extreme cases (L. F. Cardoso et al., 2018). This is also the case in women with physical changes occurring in their body due to hormonal changes.

2.4 Postpartum period

The postpartum period ranges the time from birth not exceeding 42 days post-delivery and is an important period for any new mother (Timilsina, 2018). This post-partum period brings about varied level of changes physically, mentally and emotionally among females often obstructing their daily routine (Timilsina, 2018). Studies have shown that a variety of complications occur in females during this period including fatigue, hemorrhoids, constipation, difficulty in breastfeeding, impaired sleeping patterns, anxiety, stress, bleeding, urinary incontinence and at times even post-traumatic stress disorders (Cooklin et al., 2018). The health of the mother during this period is closely tied to the new borne health and might affect them as well. It is often noted that post-partum changes in the body followed by the afore mentioned health concerns drops the quality of life of mothers in their most vulnerable part of the life.

Women post-delivery are considered impure in many cultures and special forms of hygiene practices are performed. Jordanian women are found to wash their genitalia constantly with soap and water as it is believed to be polluted during delivery. Women are considered dirty and unclean until the bleeding stops. This has led to practices such as

purification bathe among Muslim women after the bleeding ceases and prohibition of any sexual activity until then. This is also seen among several other cultures including those living in Arab countries, China and Thailand (Dennis et al., 2007). In some areas new mothers are prohibited from using the front door of the house for entry to avoid offending guardian gods or spirits.

Due to the feeling of impurity, the new mothers not allowed to prepare food for other family members where they fear that it might cause illness or even death (Timilsina, 2018). In the Hindu culture, this form of ban from kitchen duties are often practiced till the tenth or twelfth day postpartum. They are deemed clean after performing a ceremony and then allowed to do the daily household chores. In Hindus living in Eastern side of India, not only the mother is deemed impure but the whole family is deemed impure and outsiders refrain from eating and drinking in the family's kitchen until the ritual cleansing ceremony are performed. The family is also refrained from attending or celebrating any religious events during the period of perceived impurity (Withers, Kharazmi, & Lim, 2018). While post-partum bleeding is considered dirty in Hindus, however in Pakistan heavy bleeding post-delivery is considered healthy and beliefs persist that this process cleanses the women by releasing the accumulated unclean menstrual blood within during the nine months of pregnancy (Dennis et al., 2007).

The disparity and severity of prohibitions to new mothers often vary between rural and urban population. A cross-sectional comparative study was done to examine the restrictions post-partum among women in urban and rural settings of western district of Yangon, Myanmar in 2009. The study revealed that out of the 196 women aged between 15-24 years old mothers, 90.6% of them followed dietary or food prohibitions with 90.6% experiencing it more during postpartum. The practice was higher among rural women than their urban counterparts by almost nine percent (Sein, 2013).

A qualitative study was conducted in two unknown rural villages of Nepal among 70 participants involving women, men (husband/father-in-law) and health service providers exploring cultural practices, taboos, and beliefs during pregnancy and around childbirth. The results of the study among the different ethnic groups presented that among all postpartum women were considered polluted and each following different traditional practices on maternity and postpartum (Sharma, van Teijlingen, Hundley, Angell, & Simkhada, 2016b).

On a long term these cultural and traditional obstruction from accessing food and seclusion from performing daily routine activities among new mothers could have a standing health effect. Reports have indicated that higher percentage of women in developing countries (20-40%) than those in developed (10 to 15%) eventually develop depressive symptoms during pregnancy and postpartum. This is mostly attributed to the physical changes that occur in women post-delivery and the restrictions they face from the existing deleterious cultures and traditions (Timilsina, 2018).

2.5 Chaupadi: A menstrual taboo

A common social and cultural taboo affecting lives of girls and women living in Western and Far western parts of Nepal is *Chaupadi*. “*Chaupadi*” is a term coined from the Hindu culture where “*Chau*” stands for Menstruation and “*padi*” meaning women. Both of these combined together form the word *Chaupadi* where women are made to stay away from their families and kins during their menstrual period and live secluded during the so called impure time either inside or even in tiny huts besides the house known as “*Chaugoths*”(S. Parajuli, KC, H., Bhattarai, Shrestha, & Srivastav, 2018). In Nepalese language, ‘*Goth*’ means an animal shed which is made from stone, hay, mud or wood. It is important to note that this practice is not purely limited to menstruation but is also at times related to childbirth in rural parts of Sudurpaschim province of Nepal where deliveries still take place in unhygienic shed and both the mother and newborn are made to stay in exile for 10-14 days post-partum increasing the risk of

maternal and neonatal deaths (Amatya, Ghimire, Callahan, Baral, & Poudel, 2018). In this practice it considers Hindu women impure during menstruation and after delivery. As a result, during these times, women are separated from others in normal daily life (to the extent of even being isolated in rudimentary sheds), lack of proper care and nutrition, are not permitted to attend school while at the same time being expected to engage in hard outdoor labor.

It is not limited to the Western parts but is pervasive throughout Nepal. However, the remoteness of the Karnali and Sudurpaschim provinces result in significantly less exposure by both men and women to changing ideas, policies, laws, systems, and attitudes. As a result of this patriarchal approach that subordinates women, women lack control, for example, over decisions in matters relating to their own bodies, investment in their capacity development, and access to and control over economic resources such as property. Moreover, because of the way socialization in Nepal takes place, women themselves, often unconsciously, enforce the patriarchal system, accept male dominance and subordination, and undervalue their own worth.

A cross-sectional study done in 2016 in Maranthana community among women of reproductive age (15-49 years) of Pyuthan district of Mid-western Nepal indicated that 94.5% of the women out of 109 studied had experienced *Chhaupadi* during their lifetime (S. Parajuli, KC et al., 2018).

The cross-sectional study done as part of project of Action Works Nepal (AWON) and BEE Group implementing "Elimination of *Chhaupadi* practice in three districts, Jumla, Kalikot and Mugu of Karnali Province through financial support of European Commission (EC) covering 1237 women and adolescent girls (aged 11-49 years) showed that 74.1% of women have child delivery in separate-hut, and 80.1% of women stayed in such place alone with their infants (Dahal, Acharya, Munakarmi, Sunar, & Parajuli, 2017).

During a cross-sectional study conducted among 61 adolescent girls from the age group 10-19 in rural village of Sunsari district in the year 2013, 56% girls experienced different types of restrictions during menstruation with 16% were kept away from home or in corner of room (Sapkota, Sharma, Budhathoki, Khanal, & Pokharel, 2013)

Most recently a cross-sectional study done in 2018 at Achham district of Sudurpaschim Province among 107 adolescent girls aged 10-19 years showed that 72% of the girls practiced *Chaupadi* yet remaining other girls also practicing some forms of menstrual taboos (Amatya et al., 2018). A total of 28 incidents of *Chaupadi* were reported in between 2010-2018 in national newspapers among which 9 incidents were related to death of the girls and women.

One cross-sectional study was conducted in 2014 among 672 women of menstrual age (12-49 years) in Bardiya and Kailali districts of Nepal, which are the areas occupied by the migrants who are inhabitants of places where *Chaupadi* originated. The findings revealed that among all significant predictors, the *Chaupadi* was a high risk factor as reproductive health problem (Ranabhat et al., 2015)

The experiences of *Chaupadi* are interlinked and contributes to negative impacts on women's and girls' lives. The Impacts includes harm to physical and psychological health as well as education and social engagement. People relate to persistence of such practices in the society to poverty, low level of literacy and the imposition of a patriarchy, however, some studies have illustrated that even in places with women who are educated and living in multi-storey buildings in urban settings also practice certain taboos related to seclusion during menstruation. Despite rapid urbanization, multiple research conducted and high-level advocacy by health experts globally, menstrual health as well as hygiene persists as a major public health concern with *Chaupadi* still being practiced in even urban dwellings (L. F. Cardoso et al., 2018).

2.6 Chaupadi- Resistance and law enforcement

Nepal over the years has taken steps to ban this taboo with the first step taken by The Supreme court of Nepal in 2005 along with the Ministry of Child and Social Welfare guidance in 2008 with even stricter laws to help eradicate *Chaupadi*. Even during Maoists insurgency and into democratic republic efforts were put to stop this practice with the latest being the law in 2015 where the Constitution itself declared such practices as punishable by law with the victim liable for compensation for the suffering they have undergone (Commission, 2015). Deaths in the *Chaugoths* have seen string actions taken by authorities in the past. Three deaths in 2017 created waves of publicity to force the Parliament to enact a new law criminalizing *Chaupadi* as well as imposing hefty fines and even imprisonment up to three months to those who forced women to follow such a custom (Amatya et al., 2018). The three deaths in Bajura in 2019 led to 60 sheds being torn down out of a total 120 sheds in the Municipality (Prakash, 2019a). Law enforcement after sporadic incidences of casualties alone will not suffice to stop this practice. Unless the attitude and belief that is deep-rooted within the community is changed coupled with strong punishment to the perpetrators, it will be a while before this taboo is abolished from within the society (Prakash, 2019a). This is one of the main reasons why despite all the efforts made by various national and international agencies in demolishing the sheds, rapid urbanization of the communities, migration of the people to lower lands from the rural hilly areas, improved literacy rates, and a law in place to punish those who do not abide, *Chaupadi* still is practiced in certain parts of the country and there is a need to understand the underlying deep rooted causes including the lived experience and superstitious beliefs existing among girls and women.

2.7 Consequences of Chaupadi

The major issue surrounds the practice is the seclusion experienced by women and children and also the persistent threats that it imparts in their health as well as general wellbeing. During menstruation, the women are not only

secluded from daily household chores but also limited in their access to basic necessities including food, drinking water, milk and milk products, read or write, touch other person, livestock, vegetables, plants, fruits. In addition they are made to bathe, use separate sanitary facilities and to live their nights in adverse living conditions throughout their menstrual period exposing them to risk of abuse, attack and extreme weather (Amatya et al., 2018), (Upadhyay, 2018). It is believed that menstruating girls and women are impure, and anything touched by them are considered impure and need to undergo purification in some way or, for certain things, to be even discarded. The practice of *Chaupadi* along with the level of seclusion is comparatively severe in Karnali and Sudurpaschim provinces of Nepal. Girls and women exposed to *Chaupadi* in *Chaogoths* or cowsheds are often vulnerable to various risks including hot and cold weather, harassment, abuse- sexually as well as verbally, assaults, attack by snakes and wild animals and natural disasters such as earthquakes and flooding. Furthermore, isolation from family members as well as transient social exclusion from taking part in key events including ceremonies and rituals often result in decreased self-esteem and persistent fear of risks leading to even depression (Timilsina, 2018). Women are asked to stay at the '*Chaogoths*', sheds or small huts, often are as big as twice the size of a doghouse and would and at times even shelter 2-3 women with some sitting up throughout the night due to lack of space to lie down. *Chaogoths* are unsafe environment with potential health risks for the menstruating women (Amatya et al., 2018). In addition to this, lack of ventilation coupled with burning of charcoal during the winter to ward off the cold would lead to severe respiratory problems and in extreme cases death due to lack of oxygen (Amatya et al., 2018).

All the above described characteristics and adverse consequences of seclusion during menstruation also applies to the immediate post-partum women and in this case, they have severe effects on their newborn and other small breast feeding children who always stay with their mother (Sharma et al., 2016b).

Four deaths including 2 women and 2 children were reported in Doti district alone of SPP in 2019 due to asphyxia because of burning coal inside the *Chaugoths* to ward off the cold weather during winter. People who suffer from monthly ostracization (Pratichya, 2019). In Bajura district of Sudurpaschim Province also a woman and two of her children were reported dead after a fire engulfed their blanket in early 2019 (Prakash, 2019b). Despite the sporadic news about the *Chaupadi* induced mortality, there is no concrete cumulative data regarding the actual number of deaths attributed to the practice. Often some of the deaths in remote districts even go unnoticed.

CHAPTER 3

3.0 Research Methodology

3.1 Study Design

This study was a community based-quantitative cross-sectional descriptive and analytical study.

3.2 Study Population

The population in this study were women of reproductive age group (13-49 years) living in urban setting of Sudurpaschim province of Nepal.

3.3 Study Area

The study was carried out in an urban setting of Sudurpaschim Province. An urban municipality of Kanchanpur with high density of permanently migrated Achhami population was selected.

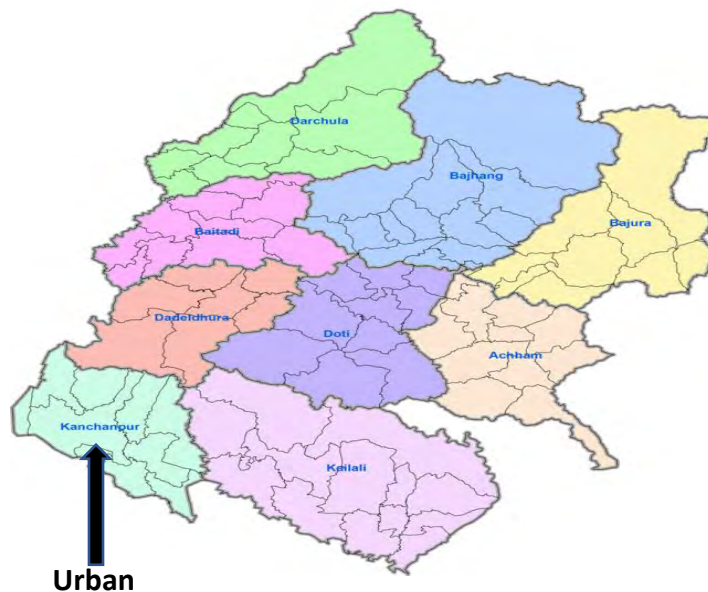


Figure 4. Map of Sudurpaschim Province

The research setting included the social and economic characteristics of urban (Krishnapur Municipality of Kanchanpur district) in Sudurpaschim Province. Krishnapur MP is well populated, with crowded streets filled with businesses, Internet shops, and a growing number of hotels catering to tourists. There are health clinics, hospitals and numerous pharmacies, the latter of which sell menstrual-related sanitary supplies (for example, pads, cotton wool, small towels) for women who can afford them. There are a large number of public and private schools.

3.4 Measurement tools

The questionnaire was derived from similar previous studies on *Chaupadi* in Nepal (Amatya et al., 2018) (S. Parajuli, KC et al., 2018). It was however been modified to align with the objectives of this study. Therefore, the questionnaire was validated by conducting a pilot study in a similar subset of population.

- Demographic & Economic Characteristics in the questionnaire included altogether eleven questions to find the general information on the age of the respondent, ethnicity, literacy/ level of education, the type of family and size of the family, marital status, family income and the age at menarche, availability of Toilet facilities during menstruation, distance of toilet from *Chaugoth*.
- Similarly, the second section regarding Sociocultural characteristics included five questions on Decision maker in the family, pressure from family/community, breadwinner in the family and traditional belief.
- The third section on Knowledge included nine questions to help identify the awareness among the women on the right age of menarche, menstruation and the ideal things that should be used in menstruation for MHM. This section also had questions related to knowledge of the existing law on *Chaupadi*. There are nine questions on knowledge where a correct answer is given 1 score and 0 score for wrong answer or others/don't know and total knowledge scores were calculated.

Bloom's cut off point (Bloom, 1968) was used to divide Knowledge into three levels; (1) low level of knowledge (<60%), (2) moderate level of knowledge (60%-80%) and (3) high level of knowledge (>80%).

Level of knowledge	Cut off point
Low	<60%
Moderate	60%- 80%
High	>80%

- This part of questions was aimed to determine the attitude of women towards *Chaupadi* as a tradition, the existing law and its impact on health. This was reported through ten statements (seven positive three negative) via Likert Scale having 5 responses- Strongly agree, agree, neutral, disagree and strongly disagree where the statement can be both negative and positive. The rating scale will be measured as follows:

Positive Statements		Negative Statements	
Choice	Score	Choice	Score
Strongly agree	5	Strongly agree	1
Agree	4	Agree	2
Neutral	3	Neutral	3
Disagree	2	Disagree	4
Strongly disagree	1	Strongly disagree	5

Total attitude scores were classified into 3 levels with cut-off point of mean (SD). The standard point for the attitude was mean \pm standard deviation. All participant's answer will be accounted by standard deviation and mean.

Negative attitude (total attitude scores from 0-19) = point \leq mean - SD

Neutral attitude (total attitude scores between 20-27) = mean- SD < point < mean+ SD

Positive attitude (total attitude scores more than 27) = point \geq mean + SD

- This section included seven questions on Variables on menstruation such as Average no. of days in a menstrual cycle, number of days secluded during menstruation and Menstrual Hygiene Management.
- The next section included ten general questions on *Chaupadi* experiences to explain the seclusion experienced and information on days secluded, place to sleep during menstruation, number of people accompanying, allowed to cook, allowed to have regular diet, frequency of served meals, touching others including plants and animals and seclusion postpartum including the number of days secluded.
- The last section included questions on consequences of *Chaupadi* practice.
 - Social consequences (four questions): Prohibition from participating in social functions, festivals and worshipping deities, Lack of access to hygiene and sanitation facilities, Absence from daily chores: School absence/work absence
 - Physical consequences (four questions): Physical abuse, Sexual abuse, Animal attacks, Problems due to hot/ cold weather, Theft
 - Health consequences: Altogether three questions on health impacts including information of health problems were included in the questionnaire

- Physical health: Headache, Diarrhea, back pain, fever, UTI (urinary tract infection)
- Mental health: Sleep disturbance, lack of interest, loneliness, irritation
- Skin problems: Dry skin, Itch and rashes

3.5 Sample size

The sample size was calculated based on a similar research done (out of limited studies) in a rural village of Nepal in Achham the prevalence of *Chaupadi* was found to be 72%. Altogether 340 women between the age of 13 to 49 will be selected for the study.

The sample size calculation was done by using Lemeshow formula (Lwanga, Lemeshow, & Organization, 1991).

$$n = \frac{Z_{1-\alpha/2}^2 \times P \times (1-P)}{d^2} = \frac{1.96^2 \times 0.72 \times (1-0.72)}{0.05^2} = 309 + 10\% = 339.9 \sim 340$$

n = Sample Size

$Z_{1-\alpha/2}^2$ = Significant level at 95% (1.96)

d = Acceptable error (0.05)

P = Prevalence of *Chaupadi* in Nepal from Other Study (72%) (Amatya et al., 2018)

10% for refusal and withdrawal to participate

Therefore, the sample size is 340.

The 10% was added to sample size to avoid missing vital data, respondent's refusal to questionnaire or withdrawal during the interview, and incomplete answering of the questionnaire.

3.5.1 Inclusion and Exclusion criteria

Inclusion criteria

- Women of reproductive age groups (13 to 49 years old)
- Only migrant women of reproductive age groups from Achham district who are resettled at urban setting (Kanchanpur) were included in the study

Exclusion criteria

- Women not willing to participate
- Only one female of the reproductive age group was selected from each house, preferably the older females were chosen if more than two females were present in same household who fall under the criteria

3.6 Sampling Techniques

Multistage sampling technique was used for sampling of this study.

1st stage: Sudurpaschim Province was selected by purposive sampling among the 7 provinces.

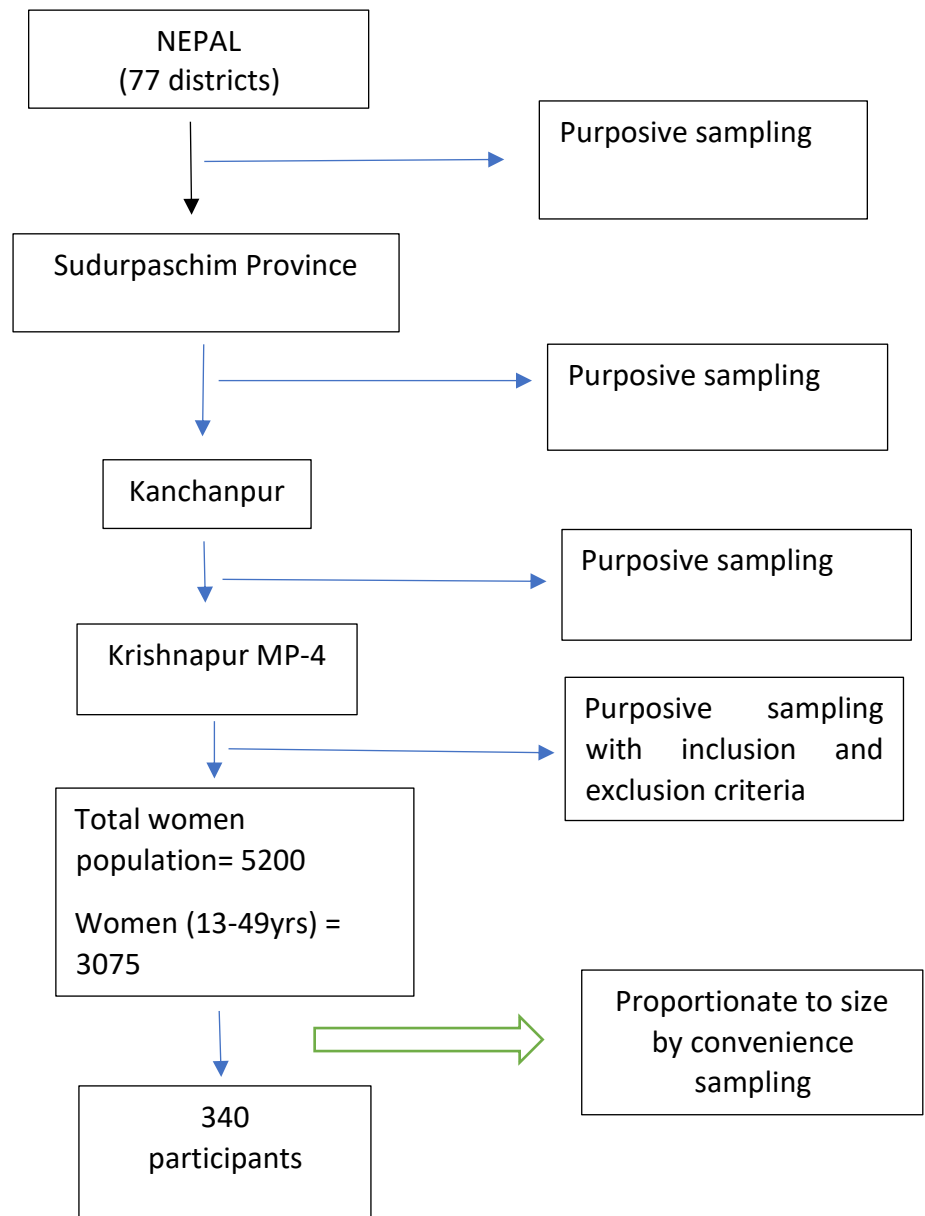
2nd stage: Kanchanpur was selected among 9 districts of Sudurpaschim Province by purposive sampling, as representative districts for urban rural settings practicing *Chaupadi*.

3rd stage: One municipality from urban (Kanchanpur) with resettled migrants from Achham district selected by purposive sampling. This district was selected because *Chaupadi* is widely practiced in Achham district and Kanchanpur has many resettled people from Achham residing there.

4th stage: One ward (village) from each urban setting were selected by purposive sampling with inclusion and exclusion criteria of the participants, i.e. females of reproductive age group (13-49 years) resettled at urban setting was done in the fourth stage

5th stage: In the fifth stage, the sample was distributed proportionate to the size of the population by convenience sampling

Sampling process



* Proportionate to size: PPS

$$KN1 = 0.110569 \times 3075 \quad n1 = 340$$

$$K = n/N$$

$$= 340/3075$$

= 0.110569

3.7 Validity and Reliability

Validity – After finalizing the questionnaire, Objective Congruence Index (OCI) score (given by three experts) was used to check the validity of the questionnaire. The score of OCI was used for the screening of item quality. In each item, the experts will be asked to determine the content validity score:

The score = 1, if the expert is sure that this item really measured the attribute

The score = -1, if the expert is sure that this item does not measure the attribute

The score = 0, if the expert is not sure that the item does measure or does not measure the expected attribute

If the IOC score is 0.60 or higher, the items was considered qualified.

Based on the scores provided by the three experts: Dr. Montakarm Chuemchit; Dr. Ratana Somrongthong; and Dr. Nipunporn Voramongkol, the content validity score average was 0.76.

Reliability - After finalizing the questionnaire, the coefficient for reliability (Cronbach's alpha) was tested among 30 persons with a cut-off point of ≥ 0.70 to estimate the internal consistency or reliability. The results from the Cronbach's alpha for pretest showed 0.849 for the attitude related questions, and 0.946 for practice related questions it was 0.71 while for the knowledge level questions for the knowledge level questions. Hence the questionnaire was deemed as reliable and consistent.

3.8 Data Collection

The data collection was done by two enumerators who was hired locally from the study sites. Both enumerators were oriented and trained on the questionnaires, consent form and the data collection procedure before commencing their field level work. As the enumerators selected were locals, it was easier for them to communicate with the participants in local dialect. The data collection was done in Kanchanpur district of Sudurpaschim Province and a

structured questionnaire validated through other studies was used for the collection of the required information. However, a pilot of the questionnaire was still done in a community in rural Kathmandu among women to understand the time consumed for each questionnaire. A detail list of the households was obtained from the municipality office before starting the field work. For verification in case of any confusion, a local female community health volunteer from that particular village or the local neighbors were asked.

The participants were selected randomly through house to house visits by the interviewer. A local female community health volunteer was asked to support in identifying the Achhami households within the village where the study was carried out. The enumerator also collected information from local youth club meetings, mothers' group meetings and also from women visiting the local health facility for health care. If the females of the household of study criteria were school going population, they were requested to fill up the questionnaire separately in the schools upon first taking consent from their parents/guardians. The data collection was done using a structured questionnaire which had been already used by other researchers and has been validated. For easier questioning and to be enumerator friendly the questionnaire was in Nepali which could be translated into English for analyses. To prevent discomfort as the topic is sensitive and personal a female interviewer was used to prevent any difficulties during data collection. For illiterate population, the interviewer read out the consent form and if agreed a fingerprint approval from the participant. The questions were asked by the interviewer and the answers were recorded accordingly. To ensure that there was no reporting bias the researcher trained the interviewer on how to collect the information with minimal bias. The interviewer was a local who could speak the local language for effective communication.

The interviewees were kept anonymous and consent was taken from the respondents prior to the interview. For girls below 18 years, consent was taken from the parents/ guardians before participating in the study. After finishing interviewing, correct or right answers were provided to each research participant. The findings of the study were

shared with the local municipality authorities after completion of the survey. The analyses were using SPSS version 21. The information collected were entered in excel and transferred and analyzed in SPSS using version 21. The field level work for data collection was conducted from July 2020 to August 2020

3.9 Data entry and Analysis

Principle researcher checked the data and the questionnaire was coded before entering the data to the computer.

After that, data entry was done by double entry process and data cleaning was performed before the analysis.

3.9.1 Statistical analysis

1) Descriptive statistics: Frequency, percent, maximum, minimum, mean and standard deviation was used to describe the variables.

2) Inferential statistics:

Bivariate analysis: Pearson's Chi Square test was used to find the associations between independent and dependent variables. Those variables with frequency less than 5 in more than 20% of cells, Fisher's exact test was used to find the associations.

Multivariate analysis: Binary logistic regression was used including variables which had $p < 0.2$ from the Chi square test or Fischer's exact test to construct the multivariate analyses model. The multivariate analysis was done to find the factors associated with a dummy outcome variable experience of menstrual exile.

3.10 Limitation

There were a few limitations of the study as listed below:

- As the study was carried out in a small specific geographical location, the results cannot be generalized to the whole population.

- Adjustment had to be made to collect data and prolonged the anticipated period due to travel restriction (lockdown) enforced by the government due to COVID 19 pandemic.
- Since the topic was sensitive owing to the new rules and regulations there could be reporting bias from the participants.

3.11 Ethical Consideration

- Joint Ethics approval was obtained from Research Ethics Review Committee for Research Involving Human Research Participants, Group I, Chulalongkorn University (COA No. 179/ 2020), Thailand and the Ethical Review Board at the Nepal Health Research Council (NHRC), (302/ 2020 MT).
- The people who did not meet the criteria for the study were informed on why they could not be considered for the study. A detail list of the households was obtained from the municipality office before starting the field work. For verification in case of any confusion, a local female community health volunteer from that particular village or the local neighbors were asked.
- Consent forms were used to take written consent from all the participants and anonymity of their identity was strictly maintained with separate codes given for each individual. The participation for this study was voluntary and the participants could withdraw at any time during the survey. The confidentiality and anonymity of the participants was ensured by giving reference numbers and names were not mentioned anywhere in the questionnaire.
- The confidentiality of the survey data was ensured during data collection storage, analysis and dissemination of the results. As a strict adherence to anonymity was taken by the researcher, the study

prevented any form harm or ill effects to the participants of the study. All the information (paper and electronic data) were stored safely by the researcher.

3.12 Expected Benefits & Application

The study was able to identify the various physical, social and health consequences of menstrual exiles and the status of *Chaupadi* practice along with seclusion in *Chaugoths*. The study results could also help understand the progress made by the policies and the laws that have been promogulated by the country to stop this tradition. it will also identify the underlying reasons behind such practices being continued in the society. Identifying such factors will help local authorities and NGO/INGOs design targeted interventions acceptable to the community, to help remove this tradition once and for all.

Although the study was a small-scale research, nonetheless the findings of the study aims to help identify the factors that have impeded the successful abolishment of this custom.

3.13 Obstacles and strategies to solve the problem

As the study was on a very sensitive topic there were some obstacles that encountered. Following are some of the felt hinderances that might arise and the possible ways to resolve them:

- Due to COVID 19 pandemic and lockdown reaching out respondents for interviewing was challenging.
- The males in the house were defiant in allowing participation. Taking along Female Community Health Volunteers created a supporting environment.
- As the topic was gender sensitive, local female enumerators were used for data collection to get the best, complete information and reduce the shyness and cultural stigma.

CHAPTER 4

4.0 Results

4.1 Part I: Descriptive Findings

4.1.1 Demographic and economic characteristics

The variables included age of the respondents, ethnicity, religion, occupation, level of education, marital status, type of family, family size, family income, availability of toilet and the distance of the toilet from the house or the place of *Chaupadi*/ menstrual exile (ME).

Table 1. Respondents by Demographic and Economic Characteristics

Demographic and Economic Characteristics	Frequency (n)	Percent (%)
Age in categories		
13-20	78	22.9
21-30	118	34.7
31-40	104	30.6
41-49	40	11.8
Mean (\pm Std. Deviation) = 29.33 \pm 9.397 (Minimum= 13 years; Maximum= 49 years)		
Ethnicity		
Brahaman/Chhetri	289	85.0
Adivasi/Janajatis	21	6.2
Dalits	21	6.2
Tarai/Madhesi Other Castes	4	1.2
Muslim	5	1.5
Religion		
Hindu	330	97.1
Christian	5	1.5
Islam	5	1.5

Occupation		
Farmer	28	8.2
Migrant worker	19	5.6
Housewife	137	40.3
Labor	7	2.1
Employee	35	10.3
Student	114	33.5
Level of Education		
Primary	31	9.1
Secondary	122	35.9
Higher secondary	88	25.9
Undergraduate	26	7.6
Postgraduate	25	7.4
Literate- able to read and write	28	8.2
Literate- able to read only	6	1.8
Illiterate	14	4.1
Marital status		
Married	206	60.6
Unmarried	128	37.6
Widowed	6	1.8
Type of family⁰		
Nuclear	208	61.2
Extended	132	38.8
Family size		
2 to 4	145	42.6
4 to 8	158	46.5
>8	37	10.9
Mean (\pm Std. Deviation) = 5.51 \pm 2.420		
(Minimum=1; Maximum= 16)		
Family income		
0-20000 NRs	233	68.5
20001-40000 NRs	95	27.9

40001-60000 NRs	8	2.4
>60001 NRs	4	1.2
Mean (\pm Std. Deviation) = NRs 20158.82 \pm 11305.330		
(Minimum= NRs. 5,000; Maximum= NRs. 100,000)		
Availability of toilet		
Yes	305	89.7
No	34	10.0
Distance of toilet from Chaugoth		
Less than 15m	268	78.8
More than 15m	72	21.2

Table 1 above illustrates that the respondents were women aged between 13 -49 years of age with an average age of 29.33 years (SD \pm 9.397). Majority of the respondents were Brahman/ Chettri (85%) and were Hindus (97.1%). Among all the respondents 40.3% of them were housewives, 33.3% students while 10.3% of the women were employed. Altogether 35.9% respondents had completed secondary school while 25.9% of the women had completed higher secondary school. Among the respondents 4.1% of the women were fully illiterate. Altogether 60.6% of the respondents were married and 61.2% were living in a nuclear family, with a mean family size of 5.51 members (SD \pm 2.42). With regards to the family income, majority of the respondents (68.5%) had a family income of less than 20000 NRs per month. The average family income was NRs. 20158.82 (SD \pm 11305.330). Most of the families had a toilet (89.7%) while the distance of the toilet was within 15 meters from the house for 78.8% of the respondents.

4.1.2 Sociocultural Characteristics

Similarly, the sociocultural characteristics included the variables: main earner in the family; person influencing Chaupadi; traditional belief; belief regarding the purity during period; and key decision makers in the family.

Table 2. Distribution by Sociocultural Characteristics

Sociocultural characteristics	Frequency (n)	Percent (%)
Main earner in the family		
Spouse	174	51.2
Parents	118	34.7
In-laws	18	5.3
Other guardians	6	1.8
Myself	24	7.1
Person influencing Chaupadi		
No one/ self-influenced	201	59.1
Pressure from spouse	12	3.5
Pressure from in-laws/ parents	120	35.3
Pressure from relatives	5	1.5
Others	2	.6
Traditional belief		
Yes	188	55.3
No	143	42.1
Don't know	9	2.6
Belief regarding purity in period		
Yes	104	30.6
No	226	66.5
Not sure	10	2.9
Key decision maker in the family		
Spouse	150	44.1
Parents	118	34.7
In-laws	51	15.0
Other guardians	1	.3
Myself	20	5.9

Table 2 above Illustrates that among the respondents, in more than half, the main earners in the family were husbands (51.2%) while 34.7% indicated that their parents were the breadwinners in the family. Altogether 59.1% of the respondents indicated that Chaupadi was self-influenced, 35.3% responded that it was due to pressure from

the in laws or parents. Overall, 55.3% of the respondents felt that it was a traditional belief and 30.6% believed that it was because they were impure. While 44.1% of the women said the key decision makers in the family were the husbands, 34.7% respondents indicated that parents were the decision makers.

4.1.3 Knowledge regarding menstruation

Table 3 presents the level of knowledge among the total 340 respondents. It was found that 71.5% of the respondents had low level of knowledge, 27.9% of them had moderate level of knowledge while only 6% of them had a high level of knowledge regarding menstruation. Using the Bloom's criteria for level of knowledge, the overall respondents can be classified as having low level of knowledge on menstruation.

Table 3: Respondents by level of knowledge

Level of knowledge (n= 340)	Number (n)	Percentage (%)
Low level of knowledge (<60%)	243	71.5
Moderate level of knowledge (60%-80%)	95	27.9
High level of knowledge (>80%)	2	6

Table 4 below presents the number and percentage distribution of the correct level of knowledge answered by the 340 respondents that took part in the study. Out of the total nine questions asked to the respondents, four of them were regarding menstruation, three of them regarding menstruation hygiene maintenance and one question on

legality of Chaupadi practice (living outside in a separate Chaugoth). The results illustrated that only 7.6% of the respondents knew about the exact origin of the menstruation blood while slightly more than half of them (55.3%) knew that the menstrual blood was hygienic. A total of 78.5% of the respondents knew about the right age of menarche (12-14 years) with a mean age of menarche answered as 13.34 years (SD \pm 1.493). Similarly, two thirds of the respondents (64.6%) knew that the average duration of the menstruation was between 4-6 days. Regarding knowledge on menstruation hygiene maintenance, 55.9% of the respondents knew that a sanitary pad or napkin was to be used while less than half (46.5%) of them knew that soap and water was the best material to clean the genitalia during menstruation. Only 13.5% of the respondents knew that the used absorbents needed to be disposed. Furthermore, a high number of respondents (83.8%) knew that Chaupadi practice was illegal.

Table 4. Respondents by Knowledge on Menstruation, Menstruation Hygiene Maintenance and Chaupadi

Knowledge question (n= 340)	Correct answer	
	Number (n)	Percentage (%)
Origins of menstrual blood		
[Uterus]	26	7.6
Menstrual blood is hygienic		
[Yes]	188	55.3
Material to be used during menstruation		
[Sanitary napkin/ pad]	190	55.9
Material to be used to clean genitals		
[Soap and water]	158	46.5
Manage the used absorbents		
[Dispose]	46	13.5
Is Chaupadi practice legal?		
[No]	285	83.8
Causes of menstruation		

[Normal phenomenon of reproductive health of a female]	267	78.5
Year of menarche		
[12-14 years]	266	78.2
Average duration of menstruation		
[4-6 days]	220	64.6

4.1.4 Attitude towards Menstruation

Table 5 presents the level of attitude among the participants. The mean score for the total attitude was 23 with a standard deviation of 4. The score of attitudes was defined as negative when the score was less than or equal to 19 (23-4), as positive if the total score was greater than equal to 27 (23 +4), and as neutral when the score was between 19 and 27.

According to the frequency and percentage distribution of the attitude level (Table 5), it was seen that 18.8% of the respondents had negative attitude with a mean total score of 15.77 (SD± 2.61), while few respondents had positive attitude (7.6%) with a mean score of 29.31 (SD± 2.19). Majority of the respondents (71.8%) had a neutral attitude towards menstruation and Chaupadi with a mean score of 25.25 (SD± 1.39).

Table 5. Respondents by level of attitude

Level of Attitude (n= 340)	Frequency (n)	Percentage (%)	Mean	SD
Negative attitude (≤ 19)	64	18.8	15.78	2.61
Neutral attitude (20 -26)	244	71.8	25.25	1.39
Positive attitude (≥ 27)	26	7.6	29.31	2.19

Table 6 below indicates the mean, standard deviation, frequency and percentage of attitude of the respondents towards menstruation and Chaupadi. Out of a total of ten statements that were asked, the first seven were positive statements while the last three were negative statements. The respondents' response was recorded in a Likert scale ranging from strongly disagree to a strongly agree. Among the respondents, 35.9% of them strongly disagreed while 60.3% of the disagreed that Chaupadi was a tradition that undermined the overall health of women. Similarly, it was interesting to note that only 14.4% of the respondents agreed that Chaupadi practice should be stopped, whereas, more than one third of them disagreed with a further 35.9% strongly disagreeing to the statement.

Regarding allowing women to do their household chores during menstruation, only 26.2% of the respondents agreed to this while 44.7% of them disagreed. It was noted that 44.7% agreed that women should have access to sanitation facilities during menstruation while a further 39.7% of the respondents strongly agreed. Only 6.2% of the women agreed that they should not be treated as untouchables during menstruation whereas 54.1% of them disagreed to this and a further 35.9% strongly disagreeing. Similarly, 47.6% and 49.7% of the women strongly disagreed and disagreed respectively to the notion that women should have access to food and drinking water. Only 8.2% of the women agreed that people who enforce Chaupadi should be punished according to the law.

Table 6. Respondents by attitude towards menstruation and Chaupadi

Attitude towards Chaupadi	Frequency (Percentage)				
	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
Chaupadi is a tradition which undermines the overall health of women	122 (35.9%)	205 (60.3%)	0	12 (3.5%)	1 (0.3%)
Chaupadi practice should be stopped	122 (35.9%)	164 (48.2%)	5 (1.5%)	49 (14.4%)	0
Women should be allowed to do their household chores during menstruation	88 (25.9%)	152 (44.7%)	5 (1.5%)	89 (26.2%)	6 (1.8%)

Women should have access to sanitation facilities during menstruation	0	9 (2.6%)	(2.9%)	186 (44.7%)	135 (39.7%)
Women should not be treated as untouchables during menstruation	122 (35.9%)	184 (54.1%)	(3.2%)	21 (6.2%)	2 (0.6%)
Women during menstruation should have access to food and drinking water	162 (47.6%)	169 (49.7%)	4 (1.2%)	5 (1.5%)	0
People enforcing Chaupadi should be punished according to the law	178(52.4%)	127 (37.4%)	7 (2.1%)	28 (8.2%)	0
Chaupadi is an important Hindu tradition*	12 (3.5%)	233 (68.5%)	(5.6%)	(13.5%)	30 (8.8%)
Chaupadi should be practiced to not offend the God*	28 (8.2%)	231 (67.9%)	(14.4%)	15 (4.4%)	17 (5.0%)
Women are impure during menstruation*	15 (4.4%)	224 (66.1%)	(6.8%)	(15.6%)	25 (7.4%)

**negative statement*

Regarding the negative statements that were asked to the respondents, 68.5% of the respondents disagreed to the fact that Chaupadi was an important Hindu tradition. A large number of women (67.1%) also disagreed to the statement that Chaupadi should be practiced not to offend the God while a similar number of respondents (66.1%) disagreed that women are impure during menstruation.

4.1.5 Experience on Menstruation, menstruation hygiene practice

The section includes the age at menarche; duration of menstruation; type of absorbents used; frequency of changing the absorbents; management of the used absorbents; materials used to clean genitalia and the bathing frequency.

Table 7. Variables on Menstruation

Variables	on	Frequency	Percentage
Menstruation		(n)	(%)
Age at Menarche (Years)			

11	10	2.9
12	45	13.2
13	54	15.9
14	114	33.5
15	50	14.7
16	44	12.9
17	11	3.2
18	8	2.4
19	3	.9
20	1	.3

Mean age of menarche 14.15 years SD 1.612

(Minimum=11 years; Maximum=20 years)

Duration of Menstruation (days)

3	18	5.3
4	70	20.6
5	102	30.0
6	39	11.5
7	65	19.1
8	44	12.9
9	2	.6

Mean days of menstruation 5.6 days SD 1.485

(Minimum= 3 days; Maximum=9 days)

Types of absorbents

Sanitary napkin/ pad	186	54.7
Homemade pad	24	7.1
Cloths	130	38.2

Frequency of absorbents change

once every 24 hours	33	9.7
twice every 24 hours	153	45.0
More than two times every 24hours	154	45.3

Management of absorbents

Dispose in the bin/ regular waste	74	21.8
Burn	203	59.7
Dispose in an open pit	24	7.1
Bury	36	10.6
Others	3	.9
Material used		
Pain Water	194	56.9
Soap and Water	145	42.8
Bathing time		
First day	15	4.4
Third day	48	14.1
Seventh day	10	2.9
Daily	266	78.2

The table 7 above illustrates that the age of menarche for the respondents started from 11 years of age with an average age of 14.15 years (SD=1.612) and mean duration of menstruation of 5.6 days (SD= 1.485). While 54.7% of the respondents used a sanitary napkin or pad during menstruation and changed them twice a day (45%) or more than two times in a day (45.3%), more than half of the respondents (59.7%) burned their used absorbents. A total of 56.9% of the respondents used plain water for cleaning the genitals during menstruation and 78.2% of them bathed daily during their periods.

4.1.6 Chaupadi Experience

This section includes the experience of the respondents on Chaupadi. It illustrates seclusion during menstruation, number of days secluded for, dwelling place during seclusion, number of people accompanying during seclusion, ability to cook during menstruation, who prepares the food, eating usual food, allowed to touch others including animals and trees, experience of seclusion post-partum and the number of days secluded during post-partum.

Table 8. Experience during Chaupadi

Experiences of Chaupadi	Frequency	Percentage
Seclusion during menstruation		
Yes	260	76.5
No	80	23.5
No. of days in seclusion		
4	203	77.8
5-6	52	19.9
7-8	6	2.3
Staying place during seclusion		
Inside House, in a separate room	319	93.8
Chaugoth	5	1.5
Cattle shed	16	4.7
No. of people accompanying outdoors		
Alone	299	88.2
2-3	34	10.0
3-5	5	1.5
More than 5	1	.3
Able to cook during menstruation		
Yes	98	28.8
No	242	71.2
Food prepared by others		
Husband	31	12.9
Parents/In laws/Children	185	77.1
Other members	24	10.0
No. of meals served in a day		
Once	11	3.2
Twice	177	52.2
More than two times	151	44.5
Eat usual food		
Yes	282	82.9
No	58	17.1
Touching others		

Yes	103	30.3
No	237	69.7
Whom not allowed to touch		
Spouse	33	13.9
Children	4	1.7
In-laws/ Parents	108	45.6
a, b & c	92	38.8
Touching animals and trees		
Yes	123	36.3
No	216	63.7
Experience of seclusion post-partum		
Yes	117	34.4
No	223	65.6
No. of days secluded post-partum		
3	5	4.2
4	42	35.6
5	12	10.2
6	8	6.8
7	13	11.0
8	4	3.4
10	3	2.5
11	12	10.2
12	14	11.9
15	1	0.8
21	3	2.5
28	1	.8

Mean number of days secluded post-partum 7.20 days SD 4.312

(Minimum= 3 days; Maximum=28 days)

The table 8 illustrates that 76.5% of the respondents experienced seclusion during menstruation and majority of them were secluded for 4 days (77.8%). A total of 93.8% of the respondents were allowed to sleep indoors in a separate room while others slept in Chaugoths (1.5%) or cattle sheds (4.7%). Majority of the women (88.2%) slept

unaccompanied during menstruation. Only 28.8% of the women were allowed to cook during menstruation and for others that cooked for them parents, children and in laws were the ones who commonly cooked (77.1%). A large number of respondents ate usual food (82.9%), however, 69.7% of the respondents indicated that they were not allowed to touch others with a further 63.7% not allowed to touch animals and tress. Almost two thirds of the respondents (65.6%) experienced seclusion after delivery of a child with an average of 7.2 days (SD= 4.312) of seclusion post-partum.

4.1.7 Physical Consequences

This section illustrates the physical consequences of Chaupadi including experience of physical harm, type of harm experienced, experience of physical discomfort, type of physical discomfort, experience of death in family of community, physical harm experienced in family or community.

Table 9. Physical consequences of Chaupadi

Physical consequences	Frequency	Percentage
Experience of Physical harm		
Yes	48	14.1
No	292	85.9
Physical harm self-encountered		
Rape	22	45.8
Physical abuse	10	20.8
Theft	7	14.6
Animal attack/s/ Snake bites	9	18.8

Experience of physical discomfort		
Yes	104	30.6
No	236	69.4
Type of physical discomfort		
Inability to sleep	32	30.8
Inability to move	61	58.7
Inability to eat	9	8.7
Death in family or community during Chaupadi		
Yes	62	18.2
No	278	81.8
Physical harm in family or community		
Yes	40	11.8
No	300	88.2

The table 9 above illustrates that 14.1% of the women experienced physical harm during Chaupadi out of which majority encountered rape or sexual abuse (45.8%). Of all the respondents 30.6% experienced physical discomfort during Chaupadi with more than half of them (58.7%) experiencing inability to move. Only 18.2% of the respondents had experienced death in family or community during Chaupadi while 88.2% of them did not experience any harm in the family or community.

4.1.8 Social Consequences

The section details the social consequences experienced during Chaupadi with information including prohibition from participation in social functions, festivals and worshipping deities, lack of access to hygiene and sanitation facilities, absence from school/work and the number of days missed.

Table 10. Social consequences of Chaupadi

Social consequences	Frequency	Percentage
Worship and attend social function		
Yes	1	0.3
No	339	99.7
Days not allowed		
4	9	2.6
5	46	13.5
6	41	12.1
7	169	49.7
8	59	17.4
10	16	4.7
<i>Mean days not allowed to worship = 6.85 days SD 1.123</i>		
<i>(Minimum= 4 days; Maximum=10 days)</i>		
Allow use of common tap		
Yes	193	56.8
No	147	43.2
Excretion site during menstruation		
Regular toilet	274	80.6
Temporary toilet	41	12.1
Open place	23	6.8
Others	2	.6
Missed school or work during menstruation		
Yes	31	9.1
No	309	90.9

No. of days missed school or work during menstruation		
2	2	6.7
3	2	6.7
4	11	36.7
5	12	40.0
7	3	10.0

Mean days missed school= 4.50 days SD 1.195

(Minimum=2 days; Maximum=7 days)

The table 10 above illustrates that almost all the respondents (99.7%) were not allowed to worship or attend social functions during menstruation for an average of 6.85 days (SD=1.123). Only 56.8% of the respondents were allowed to use the common tap for water while 80.6% of them were allowed to use the regular toilets. Only 9.1% of the respondents missed work or school during their period with an average of 4.5 days (SD=1.195) among those that missed.

4.1.9 Health Consequences

This section describes the health problems faced by respondents during Chaupadi, types of health problems faced, mental health issues during Chaupadi and skins problems experienced during Chaupadi.

Table 11. Health Consequences and Chaupadi

Health consequences	Frequency	Valid Percent
Health problems during Chaupadi		
Yes	240	70.6
No	100	29.4
Type of health problems		
Headache	33	13.8
Diarrhea	22	9.2
Dehydration	6	2.5
Thirstiness	7	2.9
Problem with urination	3	1.3

Less frequent urination	4	1.7
Lower abdominal and back pain	162	67.8
Fever	2	.8
Mental health during Chaupadi		
Lack of interest	9	2.6
Depressed	43	12.6
Irritation	25	7.4
Sleep disturbance	77	22.6
Loneliness	43	12.6
None	142	41.8
Others	1	.3
Skin problems during Chaupadi		
Rashes	3	.9
Itches	18	5.3
Dry skin/cracks	26	7.7
Red pustules	1	.3
Scars	11	3.2
None	280	82.6

Table 11 above illustrates that 70.6% of the respondents experienced some form of health problems during Chaupadi. While majority of the respondents (67.8%) experienced lower abdominal and backpain, 22.6% experienced sleep disturbance, 82.6% did not experience any skin problems. A total of 13% of the respondents either had itches or dry skin and cracks.

4.2. Part II: Bivariate Analyses

4.2.1 Association between Demographic and economic characteristics on menstrual exile experience

Table 12 below shows the association between the demographic and economic characteristics and menstrual exile. Among the variables, occupation was significantly associated with menstrual exile ($p=0.18$) with the highest being among farmers (89.3%) and housewives (81.6%) compared to other occupation. Educational level was also found

to be associated with menstrual exile ($p=0.039$) with the highest being among illiterate (87.5%) followed by postgraduate (84%) and those that have primary level education (83.9%). (Similarly, it was found that menstrual exile is also associated with availability of toilet ($p=0.003$). The results indicated that menstrual exile was common among respondents who did not have a toilet (97.1%) compared with those that did (74.1%).

Table 12: Association between Demographic and economic characteristics on menstrual exile experience

Demographic and Economic Characteristics	Menstruation exile		No Menstruation exile		χ^2 Value	P value
	N	%	N	%		
Age in categories						
13-20	57	(73.1)	21	(26.9)	4.765	#0.19
21-30	89	(75.4)	29	(24.6)		
31-40	78	(75.0)	26	(25.0)		
41-50	35	(87.5)	4	(10.0)		
<i>Mean Age= 29.33 ± 9.397</i>						
Ethnicity						
Brahaman/Chhetri	223	(77.2)	66	(22.8)	2.267	#0.519
Adivasi/Janajatis	14	(66.7)	7	(33.3)		
Dalits	15	(71.4)	6	(28.6)		
Tarai/Madhese/ Muslim/ Other	8	(88.9)				
Castes			1	(11.1)		
Religion						
Hindu	251	(76.1)	79	(23.9)	1.048	0.306
Others	9	(90.0)	1	(10.0)		
Occupation						
Farmer	25	(89.3)	3	(10.7)	8.535	#0.018*
Migrant worker	16	(76.2)	5	(23.8)		
Housewife	111	(81.6)	25	(18.4)		

Labor/ Employee	25 (59.5)	17 (26.5)		
Student	84 (73.7)	30 (26.3)		
<hr/>				
Level of Education				
Primary	26 (83.9)	5 (16.1)	11.6910	#0.039*
Secondary	95 (77.9)	27 (22.1)		
Higher secondary	60 (68.2)	28 (31.8)		
Undergraduate	16 (61.5)	10 (38.5)		
Postgraduate	21 (84.0)	4 (16.0)		
Others (Literate/ Illiterate)	42 (87.5)	6 (12.5)		
<hr/>				
Marital status				
Married	163 (79.1)	43 (20.9)	2.163	#0.339
Unmarried	93 (72.7)	35 (27.3)		
Widowed	4 (100)	2 (50.0)		
<hr/>				
Type of family				
Nuclear	158 (76.0)	50 (24.0)	0.77	0.781
Extended	102 (77.3)	30 (22.7)		
<hr/>				
Availability of toilet				
Yes	227 (74.2)	79 (25.8)	8.9	#0.003*
No	33 (97.1)	1 (2.9)		
<hr/>				
Distance of toilet from Chaugoth				
Less than 15m	199 (74.3)	69 (25.7)	3.457	0.063
More than 15m	61 (84.7)	11 (15.3)		
<hr/>				
Family size				
2 to 4	104 (71.7)	41 (28.3)	3.195	0.202
4 to 8	126 (79.7)	32 (20.3)		
>8	30 (81.1)	7 (18.9)		
<hr/>				
Family income				

0-20000 NRs	180 (77.3)	53 (22.7)	0.803	#0.669
20001-40000 NRs	70 (73.7)	25 (26.3)		
>40000 NRs	10 (83.3)	2 (16.7)		

**p*- value <0.05, # Fisher's Exact test

4.2.2 Association between Sociocultural Characteristics and Menstrual Exile

Table 13 below shows the association between sociocultural characteristics and menstrual exile. It was observed that there is an association between person influencing Chaupadi and menstruation exile ($p=0.011$). Among the respondents, the proportions of menstrual exile practice was highest among women pressured by their in-laws/parents was (85.8%) followed by pressured by spouse, relatives (73.7%) while 71.1% were self-influenced. Similarly, menstrual exile is also associated with the key decision maker in the family ($p= 0.027$). Within the groups, menstrual exile was experienced more among respondents where key decision makers were in laws (86.3%) followed by spouses (79.3%) and parents (72%).

Table 13: Association between Sociocultural Characteristics and Menstrual Exile

Socio Cultural Characteristics	Menstrual Exile		Menstrual Exile		χ^2 Value	P value
	Yes		No			
	n	%	n	%		
Main earner in the family						
Spouse	136	(78.2)	38	(21.8)	1.11	#0.893
Parents	88	(74.6)	30	(25.4)		
In-laws	13	(72.2)	5	(27.8)		

Other guardians	4 (66.7)	2 (33.3)
Myself	19 (79.2)	5 (20.8)

Person influencing

Chaupadi

No one/ self-influenced	143 (71.1)	58 (28.9)	9.580	0.011*
Pressure from in-laws/ parents	103 (85.8)	17 (14.2)		
Others (e.g. pressure from spouse, relatives)	14 (73.7)	5 (26.3)		

Traditional belief

Yes	144 (76.6)	44 (23.4)	0.015	#0.993
No	109 (76.2)	34 (23.8)		
Don't know	7 (77.8)	2 (22.2)		

Key decision maker in the

family

Spouse	119 (79.3)	31 (20.7)	10.964	#0.027*
Parents	85 (72.0)	33 (28.0)		
In-laws	44 (86.3)	7 (13.7)		
Other guardians	0 (0.0)	1 (100)		
Myself	12 (60.0)	8 (40.0)		

Belief regarding purity in
period

Yes	72 (69.2)	32 (30.8)	4.985	#0.083
No	179 (79.2)	47 (20.8)		
Not sure	9 (90.0)	1 (10.0)		

**p*- value <0.05 # Fisher's Exact test

4.2.3 Association between knowledge on Menstruation, Menstruation Hygiene Maintenance, Chaupadi and

Menstruation Exile

An association was sought between the knowledge of the respondents on menstruation, menstruation hygiene maintenance and menstrual exile. An individual analyses of all the knowledge related variables suggested that there was an association between knowledge about materials used during menstruation with menstruation exile ($p < 0.001$). It was observed that the respondents that knew the use of sanitary pads/napkins was the highest within the groups (68.9%) followed by those who thought homemade pads (57.5%) were the best materials to be used during menstruation. An association was also seen between materials used to clean genitals and menstruation exile ($p = 0.036$). Menstruation exile was higher (81.6%) for those who knew soap and water was the best material. Similarly, management of absorbents had a strong associated with menstruation exile ($p < 0.001$). Menstrual exile among those that reuse absorbents after washing was the highest (86.1%) followed by those that disposed (78.3%). However, overall, the knowledge was not found to be significantly associated with menstrual exile (Table 14).

Table 14. Association between Level of knowledge and Menstruation Exile

Level of knowledge	Percentage	Menstrual exile		No menstrual exile		χ^2 Value	P value
	%	N	%	N	%		
Low level of knowledge (<60%)	71.5	181	(74.5)	62	(25.50)	2.987	0.225
Moderate level of knowledge (60%-80%)	27.9	78	(82.10)	17	(17.90)		
High level of knowledge (>80%)	6	1	(50)	1	(50)		

4.2.4 Association between attitude and menstrual exile

Table 15 below indicates an association between attitude and menstrual exile ($p=0.031$). It was observed that menstrual exile was highest among the women with a negative attitude (80%) followed by those that had a neutral attitude (78.3%). Those that had a positive attitude had the lowest number of menstrual exiles (60%).

Table 15. Association between attitude and menstrual exile

Attitude	Percentage	Menstrual exile		No menstrual exile		χ^2 Value	P value
	%	N	%	N	%		
Negative attitude (≤ 19)	20.6	56	(80.0)	14	(20.0)	6.925	0.0310*
Neutral attitude (20 -26)	67.7	180	(78.3)	50	(21.7)		
Positive attitude (≥ 27)	11.7	24	(60.0)	16	(40.0)		

* p - value <0.05

4.2.5 Association between Menstrual experience, menstrual hygiene practice, Chaupadi and menstrual exile

Table 16 shows the association between the menstrual experience, menstrual hygiene management, Chaupadi with menstrual exile. There was an association observed between age at menarche and menstruation exile ($p=0.097$).

The menstrual exile was higher for women with an age of menarche beyond 18 years of age (91.7%) followed by those between 15-17 years of age (81.9%). Average days of menstruation was also associated with menstrual exile ($p=0.002$) with those that had 8-9 days menstrual duration having most menstrual exile (89.1%) followed by those that had only 3-4 days (85.2%). Similarly, an association was also seen between type of absorbents and menstruation exile ($p<0.001$). Menstrual exile was highest among those that used cloths (88.5%). Bathing time was also significantly associated with menstrual exile ($p=0.011$). It was observed that exile was highest among women who bathed between the first to seventh day (87.7%). Only 73.4% of those that bathed daily experienced menstrual exile.

Table 16. Association between Menstrual experience, menstrual hygiene management, Chaupadi and menstrual exile

Menstruation (n=340)	Menstrual Exile		No Menstrual exile		χ^2 Value	P value
	n	%	n	%		
Age at Menarche (Years)						
11-14	163	(73.1)	60	(26.9)	4.676	#0.097
15-17	86	(81.9)	19	(18.1)		
>18	11	(91.7)	1	(8.3)		
Average days of menstruation						
3-4	75	(85.2)	13	(14.8)	17.093	0.002*
5-7	144	(69.9)	62	(30.1)		
8-9	41	(89.1)	5	(10.9)		
Types of absorbents						
Sanitary napkin/ pad	128	(68.8)	58	(31.2)	16.867	0.000*
Homemade pad	17	(70.8)	7	(29.2)		

Cloths	115 (88.5)	15 (11.5)		
once every 24 hours	26 (78.8)	7 (21.2)	0.606	0.739
twice every 24 hours	114 (74.5)	39 (25.5)		
More than two times every 24hours	120 (77.9)	34 (22.1)		
Management of absorbents				
Dispose in the bin/ regular waste	54 (73.0)	20 (27.0)	2.322	#0.677
Burn	155 (76.4)	48 (23.6)		
Dispose in an open pit	21 (87.5)	3 (12.5)		
Bury	28 (77.8)	8 (22.2)		
Others	2 (66.7)	1 (33.3)		
Material used				
Pain Water	143 (73.7)	52 (26.8)	2.501	0.114
Soap and Water	117 (80.7)	28 (19.3)		
Bathing time				
First day- Seventh day	64 (87.7)	9 (12.3)	8.303	0.011*
Daily	196 (73.4)	71 (26.6)		

**p*- value <0.05 # Fisher's Exact test

4.2.6 Association between social consequence and Menstrual exile

Association was also assessed for social consequences and menstrual exile. As indicated in table 17 below, our study indicated that there was an association between days not allowed to worship and attend social function and menstrual exile ($p=0.001$). Menstrual exile was the highest among those that were not allowed to worship and attend social function for 8 days (96.6%) followed by those that were not allowed for four days (88.9%). Similarly, an association was noted between women allowed to use common tap and menstrual exile ($p<0.001$). It was observed that menstrual exile was higher among those that were not allowed to use the common tap (90.5%). Excretion site during menstruation was also found to be associated with menstruation exile ($p=0.006$). Menstruation

exile was seen more in those who used open place for excretion (96%) followed by those that use a temporary toilet (87.8%).

Table 17. Association between social consequence and Menstrual exile

Social Consequences	Menstrual Exile		No Menstruation Exile		χ^2 Value	P value
	n	%	n	%		
Worship and attend social function						
Yes	1	(100)	0	(0.0)	0.309	#0.579
No	259	(76.4)	80	(23.6)		
Days not allowed						
4	8	(88.9)	1	(11.1)	20.71	#0.001*
5	29	(63.0)	16	(34.8)		
6	32	(78.0)	9	(22.0)		
7	120	(71.0)	49	(29.0)		
8	57	(96.6)	2	(3.4)		
10	13	(81.3)	3	(18.8)		
Allow use of common tap						
Yes	127	(65.8)	66	(34.2)	28.232	0.000*
No	133	(90.5)	14	(9.5)		
Excretion site during menstruation						
Regular toilet	198	(72.8)	74	(27.2)	10.244	#0.006*
Temporary toilet	36	(87.8)	5	(12.2)		
Others	24	(96.0)	1	(4.0)		
Missed school or work during menstruation						
Yes	21	(67.7)	10	(32.3)	1.444	0.229
No	239	(77.3)	70	(22.7)		

No. of days missed school or work during menstruation					
2-4	8	(53.3)	7	(46.7)	2.400 #0.121
>5	12	(80.0)	3	(20.0)	

*p- value <0.05 # Fisher's Exact test

4.2.7 Association between Physical consequences and Menstrual exile

Our results also showed an association between menstrual exile and physical harm ($p=0.021$). It was observed that those that had menstrual exile had a higher experience of physical harm (89.6%) compared to those that didn't have any harm (74.3%). In addition to this an association was also seen between those that had experienced physical harm in their family or community with menstrual exile ($p=0.011$). Menstrual exile was higher among the group that had experienced physical harm in their family or community (92.5%) (Table 18).

Table 18. Association between Physical consequences and Menstrual exile

Physical consequences	Menstrual Exile		No Menstrual Exile		χ^2 Value	P value
	n	%	N	%		
Experience of Physical harm						
Yes	43	(89.6)	5	(10.4)	5.341	0.021*
No	217	(74.3)	75	(25.7)		
Physical harm self-encountered						
Rape	18	(81.8)	4	(18.2)	3.284	#0.35
Physical abuse	9	(90.0)	1	(10.0)		
Theft	7	(100)	0	(0.0)		
Animal attack/s/ Snake bites	9	(100)	0	(0.0)		
Experience of physical discomfort						
Yes	78	(75.0)	26	(25.0)	0.18	0.671
No	182	(77.1)	54	(22.9)		

Type of physical discomfort					
Inability to sleep	26 (81.3)	6 (18.8)	2.032	#0.566	
Inability to move	43 (70.5)	18 (29.5)			
Inability to eat	7 (77.8)	2 (22.2)			
Death in family or community during Chaupadi					
Yes	51 (82.3)	11 (17.7)	1.412	0.235	
No	209 (75.2)	69 (24.8)			
Physical harm in family or community					
Yes	37 (92.5)	3 (7.5)	6.474	0.011*	
No	223 (74.3)	77 (25.7)			

*p- value <0.05 # Fisher's Exact test

4.2.8 Association between Health Consequences and Menstrual exile

Table 19 below shows the association between health consequences and menstruation exile. Health problems during Chaupadi was associated with Menstruation exile ($p=0.036$). Menstrual exile was higher among women who have experienced health problems during Chaupadi (79.6%).

Table 19. Association between Health Consequences and Menstrual exile

Health Consequences	Menstruation Exile		No Menstruation Exile		χ^2 Value	P value
	n	%	n	%		
Health problems during Chaupadi						
Yes	191	(79.6)	49	(20.4)	4.394	0.036*
No	69	(69.0)	31	(31.0)		
Type of health problems						
Headache	26	(78.8)	7	(21.2)	6.19	#0.925
Diarrhea,	18	(81.8)	4	(18.2)		

Lower abdominal and back pain	128 (79.0)	34 (21.0)		
Dehydration, Thirst, urine problem, frequent urination, fever	17 (85%)	3 (15.0)		
Mental health during Chaupadi				
Lack of interest	8 (88.9)	1 (11.1)	6.472	#0.372
Depressed	35 (81.4)	8 (18.6)		
Irritation	18 (72.0)	7 (28.0)		
Sleep disturbance	60 (77.9)	17 (22.1)		
Loneliness	37 (86.0)	6 (14.0)		
None	101 (71.1)	41 (28.9)		
Others	1 (100)	0 (0.0)		
Skin problems during Chaupadi				
Rashes	3 (100)	0 (0.0)	3.331	#0.649
Itches	16 (88.9)	2 (11.1)		
Dry skin/cracks	21 (80.8)	5 (19.2)		
Red pustules	1 (100)	0 (0.0)		
Scars	8 (72.7)	3 (27.3)		
None	211 (75.4)	69 (24.6)		

**p*- value <0.05 # Fisher's Exact test

4.3 Part III: Multi- variate Logistic Regression Analyses

A binary logistic regression model was used to find out the statistically significant relationships between the dependent variable and the independent variables which had a *p*- value less than or equal to 0.2 in the bivariate analyses and also some of the variables that had significant association in other similar studies. For the logistics regression model, menstrual exile was changed into a dummy variable with yes given a value of 1 and no given a value of 0.

4.3.1 Binary logistic regression analyses for the association between demographic and economic characteristics and menstrual exile

Table 20 below shows the binary logistic regression analyses of each of the independent demographic and economic characteristics associated with menstrual exile among the study population. Altogether six variables which had a

p-value of equal to or less than 0.2 (age in category, level of education, occupation, availability of toilet, distance of toilet from Chaugoth and family income) were incorporated into the regression model to check for any association

Table 20. Binary logistic regression analyses for the association between demographic and economic characteristics and menstrual exile

		B	S.E.	OR	P-value
Age in Category	41- 50 years (ref)				0.57
	13-20 years	-0.62	0.72	0.54 (0.13-2.21)	0.39
	21-30 years	-0.57	0.65	0.57 (0.16-2.03)	0.38
	31-40 years	-0.83	0.61	0.43 (0.13-1.44)	0.17
Level of Education	Postgraduate (ref)				0.32
	literate/illiterate	-0.77	0.88	0.46 (0.08-2.57)	0.38
	Primary	-0.57	0.86	0.57 (0.10-3.06)	0.51
	Secondary level	-0.90	0.69	0.41 (0.10-1.59)	0.20
	Higher Secondary	-1.05	0.66	0.35 (0.10-1.28)	0.11
Occupation	Undergraduate	-1.64	0.75	0.194 (0.04-0.85)	0.03
	Student (ref)				0.35
	Farmer	0.75	0.72	2.11 (0.51-8.70)	0.30
	migrant worker	-0.03	0.68	0.97 (0.26- 3.64)	0.96
	Housewife	0.18	0.44	1.20 (0.50-2.86)	0.68
	Labor	0.09	1.21	1.1 (0.10-11.63)	0.94
Availability of Toilet	Employee	-0.79	0.51	0.45 (0.17- 1.23)	0.12
	No	2.12	1.06	8.31 (1.05-65.83)	0.04*
Distance of toilet from Chaugoth	yes (ref)				
	Less than 15m	-0.47	0.40	0.62 (0.28- 1.38)	0.24
Family income	More than 15m (ref)				
	60001-100000 (ref)				0.48
	0-20000	1.48	1.08	4.38 (0.53- 36.26)	0.17

	20001-40000	1.21	1.11	3.34 (0.38- 29.50)	0.28
	40001-60000	21.20	13276.77	1615360231.05	1.00

**p*- value<0.05

After removing the variables which had a p value of more than 0.05 in the model only availability of toilet was found to be significantly associated with ME ($p < 0.001$). Women who did not have available toilets were 11.48 times ($p = 0.017$) more at odds to experience ME compared to those who had access to toilets (Table 21).

Table 21. Binary logistic regression analyses for the association between demographic and economic characteristics and menstrual exile

		B	S.E.	OR (95% C.I)	p value
Availability of toilet	No	2.441	1.023	11.48 (1.545- 85.358)	.017
	Yes				.000*
	(ref)				

**p*- value<0.05

4.3.2 Binary logistic regression analyses for the association between demographic and economic characteristics and menstrual exile

Table 22 below shows the binary logistic regression analyses of each of the independent sociocultural characteristics associated with menstrual exile among the study population. Altogether three variables which had a p-value of equal to or less than 0.2 (key decisionmaker in the family, key influencer in the family and belief regarding purity during menstruation) were incorporated into the regression model to check for any association. It was found that women where parents and in laws were influencers were 2.36 times more at odds of practicing ME ($p = 0.01$) than those women where spouse, relatives or others were key influencers in the family

Table 22. Binary logistic regression analyses for the association between demographic and economic characteristics and menstrual exile

	B	S.E.	OR (95% CI)	P-value
spouse/relatives/others				0.03
(ref)				

Key influencers in the family to practice ME	parents/in-laws	0.86	0.33	2.36 (1.24-4.49)	0.01*
	No one/self-influenced	0.03	0.56	1.03 (0.34-3.08)	0.96
Key decision makers in the family	Spouse (ref)				0.05
	Parents	0.90	0.51	2.46 (0.90-6.74)	0.08
	In-laws	0.15	0.52	1.157 (0.42- 3.22)	0.78
	Myself	-21.82	40192.97	0.00	1.00
Belief regarding purity during period	Yes (ref)				0.01
	No	-1.16	1.11	0.31 (0.04-2.76)	0.30
	Not sure	-0.32	1.10	0.72(0.08-6.28)	0.77

**p*- value<0.05

4.3.3 Binary logistic regression analyses for the association between level of knowledge and menstrual exile

Table 23 below shows the binary logistic regression analyses of level of education with menstrual exile among the study population. There was no association elicited between level of knowledge and menstrual exile.

Table 23. Binary logistic regression analyses for the association between level of knowledge and menstrual exile

		B	S.E.	OR (95% CI)	P-value
Level of Knowledge	High level of knowledge (>80%) (ref)				0.24
	Low level of knowledge (<60%)	1.07	1.42	2.92 (0.18-47.38)	0.45
	Moderate level of knowledge (60-80%)	1.52	1.44	4.59 (0.27-77.05)	0.29

**p*- value<0.05

4.3.4 Binary logistic regression analyses for the association between type of attitude and menstrual exile

Table 24 below shows the binary logistic regression analyses of level of attitude with ME among the study population. There is a borderline positive association between level of attitude and ME ($p=0.046$) with women

having negative attitude were 2.38 times and those with neutral attitude 2.17 times at higher odds to practice ME compared to those who had positive attitude.

Table 24. Binary logistic regression analyses for the association between type of attitude and menstrual exile

		B	S.E.	OR (95%CI)	P value
Level of attitude	positive attitude (ref)				0.046
	negative attitude	0.86	0.42	2.38 (1.05-5.37)	0.04*
	neutral attitude	0.78	0.33	2.17 (1.13-4.17)	0.02*

**p*-value < 0.05

CHAPTER 5

5.0 Discussion, Conclusion and Recommendation

5.1 Discussion

This cross-sectional study was conducted in Krishnapur municipality of Sudurpaschim province among a total of 340 females who were from Achami descendent. The migrated population was the area of interest as ME is prevalent among the females in rural Acham and this study aims to see if the custom is carried in their new area of settlement. The study aimed to explore the demographic, economic and sociocultural characteristics, knowledge, attitude and practice regarding menstruation, menstruation exile, menstruation hygiene maintenance, Chaupadi and the association of all these factors with menstruation exile. This study also explored the social, physical and health related consequences faced by the women during menstrual exile.

Our study found that 76.5% of the women had or have experienced ME. The study results show that occupation was significantly associated with ME where farmers (89.3%) and housewives (81.6%) were among the highest population which practice this taboo. Education was also found to be associated with ME with a higher practice among the more educated, i.e. 84% of the women with a post graduate level of education were practicing Chaupadi. This finding is similar to another study which indicated that 72.3% of women from significantly higher level of education, from a higher caste or those who had an educated partner were among the highest practitioners of ME (Lauren F Cardoso et al., 2019).

The study revealed ME was influenced by others in a family with 85.8% due to pressure from in laws and parents, 73.7% from spouses or relatives. The Pindar Valley study also revealed a strong association between communal pressure and practice of ME (Joshy, Prakash, & Ramdey, 2019). Persistent fear of being secluded from the society

has been the reason for the continued practice among the women there. This suggests a need to ensure that health literacy of people in the whole community should be improved to bring about a long term change in behaviour and attitude. The study being conducted in an urban place also highlights the need of this to be done at a large scale and not confined to rural areas only.

The main decision making power in a Nepalese family lies with either the elders (in laws) or the spouses. The study results showed that ME is higher among women if the decision makers were in laws (86.3%) or their spouses (79.3%). Several national level health promotion campaigns have over the years started targeting the influencers to bring about social change (Almås, Armand, Attanasio, & Carneiro, 2018). This could be one way of bringing about a substantial change in the practice of ME in the community.

The study results showed that the overall knowledge of the respondents on menstruation, menstrual hygiene maintenance and Chaupadi was low. Among all the respondents, 71.5% of them had low level of knowledge (<60%), whereas 6% had a high level of knowledge (>80%). When 76.65% of the respondents have an education level of secondary level or more, this is an area of concern and emphasizes the needs for improved health literacy. In another Nepalese study, caste/ ethnicity was associated with knowledge on Chaupadi; women from lower castes or ethnic groups had a 47% less odds of practicing the taboo compared to those from higher cases (Brahmins and Chettris) (Baumann, Lhaki, & Burke, 2019). Similarly, women in remote Hills had 71% of knowledge which is lower than that of the women in Terai urban plains. The results in our showed that ethnicity and caste were not significant predictors for menstruation knowledge, however, there is a persistent need to raise community awareness via various methods to improve the health literacy of the women (Sara E. Baumann, 2019).

Regarding the attitude of the women in the study, it was found that 71.8% of them had a neutral attitude towards menstruation while 18.8% of them had a negative attitude. Another study done on Chaupadi in Nepal had 60% of

the respondents showing positive attitude (Baumann et al., 2019). Changing one's attitude is a daunting feat and especially if the attitude is negative, however, a neutral attitude can be changed with relative success seen in studies. Within the attitude, 70.6% of women disagreed that the tradition of Chaupadi should be stopped, 94.4% strongly agreed that women should have access to sanitation facilities, 90% agreed that women should be treated as untouchables and a further 89.7% opting against punishment for perpetrators who practice the tradition, reflects the deep rootedness of the ME in the women irrespective of their educational level. This could be due to external influencers including the relatives, community and members of the society.

The study results showed that 54.7% of the respondents used a sanitary napkin or pad while a few of them used pads made at home. This is a better result compared to another study where 61.1% used cloth, 35.9% used sanitary pads and 3% not using anything (Baumann et al., 2019). Baumann et al. (2019) indicated in their study that 66.7% of women disposed their sanitary pads along with normal waste, 14.6% buried them, our study showed that 59.7% of the respondents burnt the absorbents, 21.8% disposed the pads in regular waste and a further 10.9% burying it. Soap water was used to clean the reusable pads only among 42.8% of the respondents, percentage much lower than another study (98.5%) by Baumann et al. (2019). Often it is seen that the disposal practices are not standard therefore a clear guidance and protocol is required along with a proper mechanism in the community regarding disposal of used sanitary pads (Elledge et al., 2018). Type of absorbent use and average days of menstruation was significantly associated with ME in our study results. 88.5% of the respondents that used cloths were the highest groups experiencing ME. Similarly, 89.1 % of the respondents with an average menstruation period of 8-9 days had experienced menstrual exile. The dignity and mental wellbeing is related to improper waste management especially when it comes to menstrual pads and absorbents. This could also pose a potential harm to the environment which is why it is imperative knowledge on its proper use and disposal to the women in Kanchanpur.

The hygiene practice component from the study results was found to be acceptable. The study result indicated that 78.2% of the respondents bathed daily and 14.1% of them bathed after every three days. A positive association between bathing time and ME was observed with higher percentage of respondents (87.7%) that didn't bathe daily experience more ME. This result is better than the results from a study done in Accham where 72% of the respondents did not bathe daily and those who did bathe, only did it once during the whole menstruation (Amatya et al., 2018). Access to water supply in rural areas could have attributed to this finding, however, water supply is much more convenient in the urban areas which in our case explain the higher bathing percentage, suggesting a better general hygiene maintenance. Nonetheless the accessibility to the public water supply for all women should be ensured in the community. A study revealed that 15% of the women were not allowed to use the same water tap used by other family members or even the community for bathing and washing during their period (Baumann et al., 2019). Women in Pindar valley were barred from using the toilets in their own households during menstruation and had to bathe or wash clothes in a stream far off from the village (Joshy et al., 2019). This form of exile could impact the overall health of women if not changed as studies have shown that compromised hygiene maintenance during menstruation could result in complications such as skin diseases and even urinary tract infections (Dasgupta & Sarkar, 2008).

Our results showed that 76.5% of the women experience seclusion or exile during menstruation with a further 77.8% experiencing it for 4 days. Out of those who practice seclusion, 93.8% of the respondents practice exile within the house, while only 6.2% stayed outside a Chaugoth or Cattleshed during their menstruation. This result is far better than another study where 20% of the households practiced Chaupadi or ME outdoors (Ranabhat et al., 2015). A study done in Pyuthan had 94.5% of the women experience ME and stayed outside in a shed during their menarche (S. B. Parajuli et al., 2019). Similarly, in Accham 72% of the women staying outdoors in Chaugoths

during their menstruation whereas 28% were allowed to sleep indoors (Amatya et al., 2018). A total of 89% of respondents in another survey practiced some form of restriction or exclusion, with ban from participating in religious activities being the most common (68%) (Aid, 2009). Legal implications and the fear of being trialled if such practice is enforced has led to living outdoors being somewhat curtailed in recent times, with even people demolishing the Chaugoths. In Pindar valley women still undergo ME for first three days in a cattle shed followed by indoors for two days compared to the earlier tradition of spending 11 days in a Chaugoth (Joshy et al., 2019). This was mainly due to the fact that the women had to carry out regular household chores and having them secluded for 11 days every month, especially for those in a nuclear family was seemingly impossible leading to the shift in practice. In our study altogether 69.1% of the respondents were not allowed to touch others, while a further 63.7% not allowed to touch trees and animals which suggests that ME is still persistent in the society. Urbanization, migration and punishment by local authorities to the perpetrators could be factors that could have instigated the changes. However, despite the decline of practice of ME in Chaugoths or sheds the evidence of it still being practiced indoors and women being secluded from various activities, especially being treated as untouchables is concerning. Such isolation from family as well as the society can lead to women to mental health problems such as depression, anxiety, low self-esteem and disempowerment (Joshy et al., 2019).

The study results indicated that 71.2% of the respondents were not allowed to cook their own food where others cooked their food for them. Nonetheless 82.9% of the women were found to eat their usual food during menstruation while 96.7% received meals twice or more daily. This was however different in Accaham where 36% of the women who underwent ME cooked their own food outside where they stayed, while they were barred from consuming dairy products during their period (Amatya et al., 2018). A study done in 2015 showed that 37.9% of the women and girls were consuming food items other than the regular family members (Alejos, 2015).

Compromised nutrition for women during their menstruation could leave them weak and vulnerable especially as they encounter a lot of blood loss. Furthermore, in young and adolescent girls who require nutrients such as calcium and vitamin for their physical and mental growth, compromised diet could affect their regular growth pattern. These women who are undernourished, could also affect their ability of childbearing later. Studies have shown that poor diets among women is associated with fertility and affects the sex ratios, increased age of menarche, pregnancy wastage plus child and maternal mortality (Gopalan & Naidu, 1972; Mansoor, Nasir, Chughtai, & Bilal, 2016)

Seclusion experience of women post-delivery was also assessed in this study among women who had borne a child. Seclusion post-partum is common in several countries and across various religions, nonetheless, the manner and the environment in which seclusion takes place plays a vital role in maternal and child's health and wellbeing (Sharma, Van Teijlingen, Hundley, Angell, & Simkhada, 2016a). Women in Zaire and in several parts of India are secluded post delivery in a separate room or hut (Bandyopadhyay, 2009). Even in the Muslim culture new mothers are deemed impure for 40 days and hence are secluded for the duration of this period and cleansing is believed to take place once the child's head is shaved on the 40th day post partum (Bandyopadhyay, 2009). In Burma and Turkey new mothers are believed to be vulnerable to evil forces for 40 days post-partum, as a result of which the mother and baby are secluded and kept company at all times (Geçkil, Şahin, & Ege, 2009). Our results indicated that 34.4% of the women had experienced post-partum seclusion lasting an average of 7 days. It is known that new mothers experience extreme mood swings and even at times depression (Kleiman, 2017). Around 20% of women experience some form of mental illness such as depression and anxiety during the first 3 months of post-partum. Seclusion during this already vulnerable state of both mother and child in an unhygienic environment increases them both to risk of serious health consequences such as diarrhoea, pneumonia, infections, vector borne diseases and even death (Blencowe, Calvert, Lawn, Cousens, & Campbell, 2016).

This study also explored the social, physical and health related consequences experienced by the women during ME. As indicated earlier, the seclusion of women during the menstrual period compromises their freedom and individual rights. Among the physical consequences, only 14.1% of the respondents experienced any physical harm and among those that experienced, 45.8% experienced rape, 20.8% physical abuse while 18.8% experienced animal attacks. In this study result it was observed that among those women who experienced ME outdoors, 88.2% spend the night alone. There was a significant association between experience of physical harm and experience of physical harm in family or community with menstrual exile. Altogether 89.6% of respondents who had experienced physical harm or 92.5% of those who had harm in the family or community experienced ME. The Chaugoth and the cattle sheds are often not strongly secure without proper doors and latches, which results in women living in these rooms vulnerable to animal attacks or abuses (Amatya et al., 2018). A study done in India indicated that 90% of the women live in cattle sheds during their menstruation due to the fact that they can be purified by the holy cow's urine (Joshy et al., 2019). There is persistent risk when it comes to living in congested spaces with limited lighting among domesticated animals while the threat of being bitten by other pests or snakes are also probable. In the Pyuthan study it was revealed that women who experience ME outdoors suffer from snakebite, animal bite, mental problems including depression in addition to the social seclusion (S. B. Parajuli et al., 2019).

As indicated harsh living conditions adversely affect the overall health and wellbeing of a person. In our study, 70.6% of the women outlined that they suffered from one form of health problem during ME. Where abdominal pain and back pain was observed among 67.8% of respondents, 13.8% suffered a headache (13.8%) and 58.2% reported one or other form of mental health problems. These findings are congruent to another study done in Nepal where 90% of the females complained some form of physical discomfort while 85% reported abdominal pain being the most common (Pradhan, 2016). Experience of health problem was significantly associated with ME in our

study with 79.6% of women experiencing it. In the Achamese study 27.3% of the respondents had headache, was 26% had abdominal and back pain while 61% of the respondents experienced mental health issues (Amatya et al., 2018).

The most common consequences of ME is social seclusion. Often females are banned from attending social functions or worship God as they are considered impure during this time as per the Hindu mythology. In our results 99.7% of the respondents were not allowed to worship and attend social functions with an average prohibition days of 6.85. This prohibition is not confined to the rural settings but is also evident in urban parts of the country. Even in a study in Kathmandu, the capital city, 80.5% of the adolescent girls were banned from going to religious places during menstruation (Karki & Khadka, 2019). Similarly, in Pyuthan 74.3% of women were restricted to attend social events and religious festivals during menstruation (S. B. Parajuli et al., 2019). In our study only 9.1% of the respondents missed work or school during their period with a mean of 4.5 days missed. Similar results were observed in the Achhamese study where 90.9% of the girls studied did not miss school during their menstruation (Amatya et al., 2018). However, the study in Pyuthan reported that 71.6% of the women were not allowed to go outdoors while all women in Pinday valley were refrained from attending the schools during the whole period of their menstruation. Such social seclusion and severe deprivation of rights to live a normal life including attending work or schools could further aggravate mental health problems. The other issues that must be considered when it comes to schools are the availability of girl friendly sanitation facilities within the school premises, which could cause school absenteeism. This could be an integral component of adolescent health and the Water, Sanitation and Hygiene sector within communities where the projects and the communities should aim to develop and upgrade existing sanitation facilities to more female friendly toilets. Possible availability of absorbents with safe handling

and disposal mechanism should also be ensured to create a supportive environment which on a long run will not only improve attendance but also ensure women's health and their dignity is also maintained (Elledge et al., 2018).

5.2 Conclusion

Multiple factors are associated with the continued practice of Chaupadi which is why holistic approach should be adopted for the abolishment of this culture and tradition from the society. It is important to note that changes have been evident while comparing with other study findings done in the past. Nonetheless, the presence of ME in this present world even in a urban setting does raise concerns for the overall women's health. Strict measures in terms of punishment to enforcers and promoters of such taboo could be a way to set an example for the rest of the community. Improving the overall health literacy of the population by including religious leaders, elderly population and the male population to advocate for change could be an ideal strategy to help solve this issue on a longer run. It is clearly evident from even such a small scale study that present day women still undergo various social, physical and health related consequences because of ME. These menstrual taboos could easily derail the progress made till date in terms of maternal and child health indicators in the country. Access to hygiene and sanitation facilities, nutritious food is paramount for a general health and growth of women. Bearing in mind these women are future child bearers, compromises in their earlier stages could impede their fertility leading to unwanted complications. A supportive and secure environment should be created for adolescent girls and women at schools and workplaces to enable them to have access to clean sanitary facilities during their menstruation. This can not only remove the stigma but also help improve the self esteem of the individual. Overall, ME is a significant negative social taboo still persistent in the Nepalese society which needs to be abolished sooner rather than later.

5.3 Recommendation

Menstrual exile or Chaupadi has been shown to be prevalent in our study. Judging by the long history of this tradition since the medieval ages as per the Hindu religion, it is deep rooted in the Nepalese society. It would certainly take some time for this taboo to be fully removed from our society as immediate solution is not plausible. In the meantime several steps could be taken at various levels to safeguard and reduce practice and severe consequences due to Chaupadi.

- a. At the individual level: Majority of the respondents practicing Chaupadi (ME) were self-influenced, so improving the health literacy by incorporating knowledge on menstruation, MHM and direct and indirect effects of Chaupadi practice on women's health would be beneficial. Conducting periodic counselling of women during visits to health facilities for services or even at schools could help them understand about menstruation and be involved in minimizing the cultural taboo in practice.
- b. At the community level: Until the mentality of the community can be changed and the taboo completely eradicated, several measures could be taken to improve the wellbeing of the women in the community. Although it is not ideal, community halls could be developed in villages with proper sanitation and hygiene facilities with standard living bedrooms for the women in the community to stay together securely during their menstruation until the taboo is fully abolished from the society. This modality is only transitional until the taboo is abolished to ensure that the women are safe. Provision of prizes and recognition to families that stop practicing Chaupadi in the community could be a positive reinforcement modality to reduce this practice. Incorporation of adolescent health in the school curriculum to raise awareness and remove any form of shame and stigma related to both boys and girls is another way to help improve the health literacy surrounding menstruation and menstrual hygiene. Mass media campaigns and use of Female

Community Health Volunteers in raising awareness and promotion of stopping this practice could also elicit a positive change in behaviour of the population.

- c. At the Policy level: The involvement of multiple stakeholders across the communities and the local bodies should work together to support the administration in demolishing Chaugoths as a process of advocacy could help create a positive message and environment. Policies, rules and regulations have to be made more strict and regular monitoring plan in prevalent areas should be exercised by the authorities. Very minimal research have been done in the field of menstrual exile and Chaupadi, therefore, more evidences need to be generated to help inform the authorities and the policy makers in devising targeted interventions and activities which would aid in removal of this taboo once and for all from the society.

Our study intended to compare the differences between a population living in rural setting with those that have migrated to an urban setting, however, due to the travel restrictions cause by COVID pandemic, the rural arm could not be conducted. There is still a further scope for conducting such a study to compare the practices across these two settings in the future.

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VITA

NAME	Smriti Lama
DATE OF BIRTH	16 January 1989
PLACE OF BIRTH	Nepal

7.0 Annex

Annex 1: Consent Form

अन्तरवार्ता सहमति फारम

यस अन्तरवार्ताको लागि तपाईंको सहभागिता स्वयच्छिक हुनेछ र तपाईंले चाहेको जुनसुकै समयमा छाड्न सक्नुहुन्छ । तपाईंले गर्नु भएको सहयोगले यस अध्ययनको लागि धेरै नै योगदान हुनेछ । तपाईंको गोपनीयताको पूर्ण ध्यान दिइने छ तथा नामको साटो कोड प्रयोग गरिने छ।

के तपाईं यो अध्ययनमा सहभागी हुन सहमत हुनुहुन्छ ?

सहमत छु

सहमत छैन

अन्तरवार्ता दिनेको हस्ताक्षर:.....

प्रश्नकर्ताको नाम:

हस्ताक्षर:.....

****Note: - After finishing interviewing, correct or right answers will be provided to each research participant***

Annex 2: Questionnaire

Demographic & Economic Characteristics:

1. Age (years):

2. Ethnicity

- (1) Brahaman/Chhetri (2) Adivasi/Janajatis (3) Dalits
 (4) Tarai/Madhese Other Castes (5) Muslim (6) Other (please specify)

3. Religion

- (1) Hindu (2) Buddhist (3) Christian (4) Islam (5) Others

4. Occupation

- (1) Farmer (2) Migrant worker (3) Housewife (4) Labor
 (5) Employee (6) Student (7) Others (please specify)

5. Level of education

- (1) Primary (2) Secondary (3) Higher secondary
 (4) Undergraduate (5) Postgraduate and above (6) Literate- able to read and write
 (7) Literate- able to read only (8) Illiterate

6. Family income:/month (Nrs.)

7. Marital Status

- (1) Married (2) Unmarried (3) Separated (4) Widowed

8. Type of family

- (1) Nuclear (2) Extended

9. Size of family:(persons)

10. Availability of Toilet facilities during Menstruation

- (1) Yes (2) No

11. Distance of toilet from *Chaugoth*

- (1) Less than 15m (2) More than 15m

Sociocultural characteristics:

1. Who is the key decision maker in your family?

- (1) Spouse (2) Parents (3) In-laws
 (4) Other guardians (5) Myself

2. Who is the breadwinner in your family?

- (1) Spouse (2) Parents (3) In-laws
 (4) Other guardians (5) Myself

3. Who influences you to practice *Chaupadi*?

- (1) No one/ self-influenced (2) Pressure from spouse
 (3) Pressure from in-laws/parents (4) Pressure from relatives (5) Others (please specify)

4. Do you believe that you are impure during menstruation?

- (1) Yes (2) No (3) Not sure

5. Does your family believe that women are impure during menstruation?

- (1) Yes (2) No (3) Don't know

Knowledge variables:

1. What is the cause of menstruation?

- (1) Normal phenomenon of reproductive health of a female
 (2) Illness of a female

- (3) Curse of God
- (4) No idea
- (5) Others (please specify)
2. At what age do you think girls usually get their first period?
- years
3. What is the average duration of your menstruation flow?
- days
4. From which organ does the menstrual blood comes from?
- (1) Uterus (2) Vagina (3) Bladder
- (4) Abdomen (5) Others (please specify) (6) Don't know
5. Do you think the menstrual blood is unhygienic?
- (1) Yes (2) No
6. What should you use during menstruation?
- (1) Sanitary napkin/ pad (2) Homemade pad
- (3) Cloths (4) Others (please specify)
7. What material should you use to clean your genitals?
- (1) Water (2) Soap and water
8. How should you manage the used absorbents?
- (1) Dispose (2) Reuse after washing
- (3) Burn (4) Others (please specify) ...
9. Is *Chaupadi* practice legal?

(1) Yes (2) No

Attitude towards *Chaupadi*:

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. <i>Chaupadi</i> is a tradition which undermines the overall health of women					
2. <i>Chaupadi</i> practice should be stopped.					
3. Women should be allowed to do their household chores during menstruation					
4. Women should have access to sanitation facilities during menstruation					
5. Women should not be treated as untouchables during menstruation					
6. Women during menstruation should have access to food and drinking water					
7. People enforcing <i>Chaupadi</i> should be punished according to the law					

8. <i>Chaupadi</i> is an important Hindu tradition					
9. <i>Chaupadi</i> should be practiced to not offend the God					
10. Women are impure during menstruation					

Variables on Menstruation:

1. Age at menarche?

.....years

2. Average days of menstruation: days

3. What type of absorbents do you mostly use?

(1) Sanitary napkin/ pad (2) Homemade pad

(3) Cloths (4) Others (please specify)

4. How often do you change the absorbents?

(1) once every 24 hours (2) twice every 24 hours

(3) More than two times every 24hours

5. How do you manage the used absorbents?

(1) Dispose in the bin/ regular waste (2) Burn

(3) Dispose in an open pit (4) Bury

(5) Others (please specify) ...

6. What material do you use for cleaning your genitals?

(1) Plain Water

(2) Soap and Water

7. How often do you take bath during menstruation?

(1) First day (2) Third day

(3) Seventh day (4) Daily

Experiences of *Chaupadi*:

1. Are you secluded during menstruation from your family?

(1) Yes (2) No (End of questionnaire)

2. If Yes, how many days do you stay in seclusion?

(1) 4 (2) 5-6 (3) 7-8

3. Where do you stay during menstruation?

(1) Inside the house, in a separate room (2) *Chaugoth* (3) Cattle shed

(4) Courtyard/ balcony (5) Others (please specify)

4. How many people stay with you during menstruation in secluded space?

(1) Alone (2) 2-3 (3) 4-5 (4) More than 5

5. Are you allowed to cook during menstruation?

(1) Yes (2) No

If No, who cooks the food for you?.....

6. How many meals are you served in a day?

(1) Once (2) Twice (3) More than two times

7. Do you eat usual food during menstruation?

(1) Yes (2) No

8. Are you allowed to touch others during menstruation?

(1) Yes (2) No

If No, who are you not allowed to touch?

(1) Spouse (2) Children (3) In-laws/ Parents (4) 1, 2 & 3

9. Are you allowed to touch household cattle and fruit bearing trees during menstruation?

(1) Yes (2) No

10. Have you experienced seclusion post-partum?

(1) Yes (2) No

If Yes, how many days? No. of days.....

Consequences: *Social, Physical and Health consequences*

Social Consequences

1. Are you allowed to worship and attend social functions during menstruation?

(1) Yes (2) No

If No, how many days are you not allowed to worship and attend social functions?.....days

2. Are you allowed to use the common tap?

(1) Yes (2) No

3. Where do you excrete during menstruation?

(1) Regular toilet (2) Temporary toilet

(3) Open Place (4) Others

4. Do you skip school/ work during menstruation because of *Chaupadi*?

(1) Yes (2) No

If Yes, how many days do you miss every month during menstruation?days

Physical consequences

1. Have you experienced any harm/ danger during *Chaupadi*?

(1) Yes (2) No

If Yes, what harm/ danger have you encountered during *Chaupadi*?

(1) Rape (2) Physical abuse (3) Theft

(4) Animal attack/Snake bites (4) None

(5) Others (please specify) ...

2. Have you experienced physical discomfort due to extreme weather conditions during *Chaupadi*?

(1) Yes (2) No

If Yes, what kind of physical discomfort have you experienced?

(1) Inability to sleep (2) Inability to move

(3) Inability to eat (4) Others (please specify) ...

3. Has anyone in your family or community died during *Chaupadi* practice?

(1) Yes (2) No

4. Has anyone in your family or community experienced harm/ danger such as rape, snake bite, burn etc. during *Chaupadi* practice?

(1) Yes (2) No

Health consequences

1. Have you experienced any health problems during *Chaupadi*?

(1) Yes (2) No

If Yes, select all that applies:

(1) Headache (2) Diarrhea (3) Dehydration (4) Thirstiness

(5) Problem with urination (6) Less frequent urination (7) Lower abdominal and back pain

(8) Blood in urine (9) Fever (10) Others (please specify)

2. How do you feel when you practice *Chaupadi*? (select all that applies)

(1) Lack of interest (2) Depressed (3) Irritation (4) Sleep disturbance

(5) Loneliness (6) None (7) Others (please specify)

3. Do you have any of these skin problems during *Chaupadi*? (select all that applies)

(1) Rashes (2) Itches (3) Dry skin/cracks

(4) Red pustules (5) Scars (6) None