



Pelvic Inflammatory Disease among the Women Attended in Rapti Sub-Regional Hospital, Nepal

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Authors' contributions

This work was carried out in collaboration among all authors. Author MKO designed the study, performed the statistical analysis and wrote the protocol. Author KBT managed the analyses of the study and wrote the first draft of the manuscript. Author RCP managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Pelvic inflammatory disease (PID) is a disease that affects commonly young, sexually active, reproductive-age women. Infection spread from the vagina through the uterine cavity and has a wide range of clinical manifestations.

Objectives: To determine the Health related behavioral factors, disease related factors to pelvic inflammatory disease and to identify the association of socio-demographic factors, health behavioral factors and disease related factors of women with pelvic inflammatory disease.

Methods: A cross-sectional study was conducted among all women of reproductive age who attended the gynecology Department of Rapti Sub-Regional Hospital of Dang, Nepal. Non probability convenience sampling technique was used to collect data of 325 participants by using semi- structured questionnaire. The data was analyzed in SPSS version 16.00.

Results: Among 325 women 125 (38%) had PID and 200 (62%) didn't have. Status of PID was found to be statistically significant with religion ($\chi^2 = 12.7$, P -value=0.003), and cast of respondents ($\chi^2=14.9$, P -value = 0.002). There was statistical association between PID with menstruation

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($\chi^2=28.8$, P -value=0.000), genital hygiene during menstruation ($\chi^2 = 51.7$, P -value = 0.000), things used during menstruation ($\chi^2 = 15.05$, P -value = 0.000), pad change per day ($\chi^2 = 55.4$, P -value = 0.000), place of delivery ($\chi^2 = 19.06$, P -value = 0.000), UTI related problem ($\chi^2 = 58.82$, P -value = 0.000) and any RTIs ($\chi^2 = 67.91$, P -value = 0.000).

Conclusion: Around one third of women had the Pelvic inflammatory disease. Status of PID was high in women who have poor genital hygiene during menstruation, less number of pad change per day, UTI related problem and any RTI.

Keywords: *Pelvic inflammatory diseases; reproductive tract infection; sexually transmitted infections; urinary tract infection.*

1. INTRODUCTION

Pelvic inflammatory disease (PID) is defined as an inflammation of the upper genital tract due to an infection in women. The disease affects the uterus, fallopian tubes, and/or ovaries. It is typically an ascending infection, spreading from the lower genital tract [1]. These infections usually spread from the vagina or cervix through the uterine cavity and has a wide range of clinical manifestations [2]. Many women have clinically silent spread of infection to the upper genital tract, which results in subclinical pelvic inflammatory diseases [3]. It is considered to be the major source of gynecological morbidity throughout the world [4]. The actual burden of disease is unknown, but data from the USA suggest that > 10.0% of women of reproductive age have a history of PID [5]. Use of the IUD increased risk of pelvic inflammatory disease (PID) – estimated to range from two to nine times [6]. The symptoms associated with acute pelvic inflammatory disease include lower abdominal pain, abnormal vaginal discharge, intermenstrual bleeding, postcoital bleeding, fever, urinary frequency, low back pain, dysuria and nausea/vomiting [7]. According to the CDC 2015 STD Treatment Guidelines, at least one of the following clinical criteria noted on pelvic examination should receive presumptive treatment for PID: cervical motion tenderness, uterine tenderness, and adnexal tenderness [8]. Appropriate treatment for recurrent STIs in young adults includes risk reduction counseling, assistance with partner notification and patient and partner treatment after diagnosis of PID [9].

The study was conducted to determine the health related behavioral factors and disease related factors to pelvic inflammatory disease. And to identify the association of socio-demographic factors, health behavioral factors and disease related factors of women with pelvic inflammatory disease.

2. MATERIALS AND METHODS

This is a cross-sectional study design conducted in Dang district, Nepal. The study population was the women of reproductive age (15 -49 year) of Dang District of Rapti Zone and only women of reproductive age were taken who attended the Gynecology Department of Rapti Sub –Regional Hospital of Dang, Nepal. Non probability convenience sampling technique was used to collect the primary data with sample size 325. The participants were interviewed by using semi-structured questionnaire containing close ended question. Questionnaire was pretested before going to actual data collection from the field for maintaining quality control and quality assurance of the study. The data has been analyzed in SPSS version 16.00 and MS- Excel. In the study, PID is defined as an infection of the reproductive organs in pelvis cavity of women. RTI is any infection of female reproductive tract of women. STIs means infection which is generally acquired by sexual contact.

3. RESULTS

3.1 Distribution of Study Population by Socio-demographic Characteristics

Among 325 women 125 (38%) had Pelvic inflammatory disease and 200 (62%) of them did not have Pelvic inflammatory disease. Among the 325 respondents, majority of women are Hindu (90%), Christian 5%, and Buddhist 3% and Muslim 2%. According to caste indigenous (janajati) were 51%, middle caste (kshetri) 26%, lower caste (dalit) 12% and upper caste (Brahmin) 11%.

About 17 % were illiterate, 32% were primary educated, 29% got secondary education and remaining 22% attended university. Most of the respondents were housewife (56%), 17% were farmers, 10% involved in business and remaining

17% involved in services government and non-government, and their monthly income varies widely. About 33% of them have monthly income below 15000 nepali rupee per month, 52% have between 15000-25000 nepali rupee, 8% earn 25000 to 35000 and 7% earn more than 35000/month.

About 94% women were married, 5.7% were unmarried and 0.3% were separated (divorced) 60% of women getting married before the age of 20 and 40% after 20 year. About 51% got pregnant before the age of 20 and 49% beyond 20 year.

3.2 Distribution of Study Population by Health Related Factors

Among the mentioned health related variables out of 325 respondents 49% women of reproductive age group have regular menstruation and 51% have irregular menstruation. Twenty percentage changes their pads once daily, 49% changes twice daily, 23% thrice daily and 8% four times daily, 52% women used homemade pad while 48% use sanitary pads during menstruation. Among 325 women 92% were pregnant and 8% were not, out of those pregnant women, 41% were home delivery and 59% attended hospitals. Among pregnant women 30% were pregnant once, 36% twice and 26% more than 3 times. About 18% of respondents had abortion and 82% doesn't.

Only 4% of the respondents used intrauterine device as family planning method.

3.3 Distribution of Study Population by Disease

Among the study population, total sample size was 325, out of which 48% of women of reproductive age group were found to have urinary tract infections (UTIs), 33% had reproductive tract infection and only 1% had sexually transmitted infections (STIs), which indicates that urinary tract infection and reproductive tract infections are very common (Table 2). Status of PID among those women with STIs were 100%, where PID among non STIs were 37.3%, and status of PID among women with any Reproductive tract infections (RTI) were 100%, whereas PID among Non RTIs was 31.4% (not showed in table).

3.4 Association between Socio-demographic Factors and Status of PID

There was association between Religion and caste with Pelvic inflammatory diseases. Status of PID was found to be statistically significant with religion of respondents with $\chi^2 = 12.7$ and P -value =0.003. Caste of the respondents was found to be statistically significant with Pelvic inflammatory disease with $\chi^2=14.9$ and P -value=0.002 (Table 3)

Table 1. Distribution of study population by health related factors (n=325)

Variables	Frequency	Percentage
Menstrual Status		
Regular	160	49%
Irregular	165	51%
Genital Hygiene		
Never	40	12%
1-3 Times/day	164	50%
4-6 Times/day	58	18%
Every Time After Toilet	63	20%
Things Used during Menstruation		
Home Made Pad	169	52%
Sanitary Pad	156	48%
Change PAD per day		
Once a day	66	20%
Twice a day	160	49%
Three times a day	73	23%
Four times a day	26	8%
Place of Delivery		
Home	122	41%
Hospital	178	59%

Table 2. Distribution of study population by disease (n=325)

Variables	Frequency	Percentage
UTI		
Yes	157	48%
No	168	52%
STI		
Yes	4	1%
No	321	99%
RTI		
Yes	106	33%
NO	219	67%

UTI: Urinary tract infection, STI: Sexual transmitted infection, RTI: Reproductive tract infection

Table 3. Association between socio-demographic factors and status of PID

Religion	Status of PID			χ^2	P- value
	Yes	No	Total		
Christian	10	6	16	12.7	0.003*
Hindu	106	186	292		
Muslim	1	6	7		
Others	8	2	10		
Caste					
Brahamin	5	31	36	14.9	0.002*
Kshetri	31	54	85		
Janajati	68	99	167		
Dalit	21	16	37		

PID: Pelvic inflammatory diseases, χ^2 : Chi-square, *statistically significant at 0.05

Table 4. Association between menstruation and menstrual hygiene with PID

Menstruation	Status of PID			χ^2	P- value
	Yes	No	Total		
Regular	38	122	160	28.8	0.000 *
Irregular	87	78	165		
Genital hygiene during menstruation					
Never	31	9	40	51.7	0.000 *
One – three time	72	92	164		
Four – six time	6	52	58		
Every time after toilet	16	47	63		
Things used during menstruation					
Homemade Pad	82	87	169	15.05	0.000 *
Sanitary Pad	43	113	156		
Pad change per day					
Once a day	47	19	66	55.4	0.000 *
Twice a day	64	96	160		
Three times	12	61	73		
Four times	2	24	26		

PID: Pelvic inflammatory diseases, χ^2 : Chi-square, *statistically significant at 0.05

3.5 Association between Menstruation and Menstrual Hygiene with PID

There was statistical association between pelvic inflammatory diseases with menstruation ($\chi^2 =$

28.8, P -value = 0.000), genital hygiene during menstruation ($\chi^2=51.7$, P -value = 0.000), things used during menstruation ($\chi^2 = 15.05$, P -value = 0.000), number of pad change per day ($\chi^2 = 55.4$, P -value = 0.000) (Table 4).

3.6 Association of Place of First Delivery, UTI and RTI with PID

The association between the place of delivery, UTI, and RTI with PID was found to be statistically significant. Place of first delivery was statistically significant with PID with $\chi^2 = 19.06$, P -Value = 0.000. UTI related problem was statistically significant with $\chi^2 = 58.82$, P -Value=0.000 and any RTI was significant with $\chi^2 = 67.91$, P -Value = 0.000 with pelvic inflammatory diseases (Table 5).

4. DISCUSSION

The study on associated risk factors of pelvic inflammatory disease among the reproductive age women was conducted in Dang district Nepal. Participants were interviewed to find the answer about their socio-demographic characteristics, health related factors and disease related factors. A descriptive cross-sectional study was conducted on the Rapti sub-regional hospital of Gynecological Outpatient Department at Dang district, Nepal.

A study conducted by Parajuli P. et al (2016) in Morang, Nepal [10] found that Majority of respondents were Hindu (78.4%), Buddhist 17.6% and Christian 3.9%. Present study found Hindu 90%, Christian 5%, and Buddhist 3% and Muslim 2%. The Religion composition of both studies is somehow similar which may be due to the homogeneous socio-cultural composition and geographical similarities of study area.

A study conducted by Vanamala VG et al (2018) in India [11] found that most of the participants were illiterate (35.3%), followed by primary school education (29.3%), high school 26%, graduate 8.66% only 1.5% was a postgraduate. In this study only 17% were illiterate, 32% were

primary educated, 29% got secondary education and remaining 22% attended university. The education level of participant of this study is slightly satisfactory as compared to study of Hyderabad, Telangana, India, which may be because of rural-urban cultural divide.

A study conducted by Parajuli P et al (2016) in Morang, Nepal [12] found that only 33.3% of respondents were used the sanitary pad, 42.2% pieces of cloths and 26.6% use both. In this study 48.5% respondents use sanitary pad and 27.7% use homemade pad. The similar result may be due to of similar group of participant in a same country.

A hospital based cross-sectional study conducted by Torendel et.al (2018) in Odisha, India [13] showed that RTI prevalence among the women was 62.4% and most common infection was Bacterial vaginosis. In present study the prevalence of RTI is only 33%. This difference may be due to the syndromic diagnosis and different diagnosis criteria used for for diagnosis of RTI.

A cross-sectional study conducted by Kafle P et al (2014) in Rupandehi, Nepal [14], the prevalence of symptoms of RTI among married women of reproductive age in the study population was found to be 39.9%. In present study incidence of RTI is 33.3 % which is similar to Kafle and Bhattarai study. Status of PID among women with any reproductive tract infection was 100%, Whereas PID among Non RTI was 31.4%. Status of PID among those women with STI was 100%, where PID among non STIs was 37.3%. Thus people with reproductive tract infections have highest incidence of PID which is statistically significant at P value= 0.000.

Table 5. Association of place of delivery, UTI and RTI with PID

Place of first delivery	Status of PID			χ^2	P-Value
	Yes	No	Total		
Home	67	55	122	19.06	0.000*
Health facility	53	125	178		
UTI related problem					
Yes	94	63	157	58.82	0.000*
No	31	137	167		
Any RTI					
Yes	34	0	34	67.91	0.000*
No	91	198	289		

PID: Pelvic inflammatory diseases, RTI: Reproductive tract infection UTI: Urinary tract infection, χ^2 : Chi-square, *statistically significant at 0.05

A study conducted by Pandey B (2015) in Humla and Kathmandu Nepal [10] displayed that diagnosis of pelvic inflammatory disease were 30% of attendance among women aged between 31 to 40 years (44.6%), in rural areas (45%) and people who are illiterate ($P < 0.0001$). Present study reveals that high prevalence of PID 56.7% in Dalit (lower caste) followed by Janajati 40.7%, Kshetri (middle caste) 36.4% and Brahman (upper caste) 13.8%. Which has statistically significant relationship ($P = 0.002$) and Status of PID was found to be statistically significant with religion of respondents with $\chi^2 = 12.7$ and with P -value = 0.003. It means there is association between religion and cast with Pelvic inflammatory diseases.

A study conducted by Shingade P P et al (2016) in Mumbai, India [15] found that all menstrual management practice statistically significant association with STI/RTI and there is statistical significant association between unclean practice of washing as well as drying of reuse cloths in sunlight or close space with RTI. In present study, there is statistical association between pelvic inflammatory diseases with menstruation, genital hygiene during menstruation, things used during menstruation and pad change per day. Both studies are showing the relationship of STI/RTI with the menstrual hygiene practices.

5. CONCLUSION

Pelvic inflammatory disease is one of the major health problems among reproductive age of women worldwide. A descriptive cross-sectional study was conducted among 325 reproductive age women of Rapti sub regional hospital Dang, Nepal. The result from this study showed the prevalence of PID in reproductive age women's PID is still high in Dang district of Nepal. One can develop PID without ever having an STI. There are several factors that can cause pelvic inflammatory disease include having unsafe sex, lack of menstrual hygiene, multiple partners, using IUD to prevent pregnancy, unsafe abortion, age of marriage, religion and caste, etc.

In present study PID is more common among the Christian. Also Indigenous (Janajati), lower caste (Dalit), middle caste (Kshetri) and higher caste (Brahmin) have high to low prevalence respectively. PID among the women who had home delivery was more common than those who had delivery at health centers. All the women who have STIs and RTIs have PID also.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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