



# Prevalence and Correlates of Hysterectomy in Rural Women of Chittoor District, Andhra Pradesh

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## Abstract

Existing statistics indicate that the prevalence of hysterectomy is in surge in India. Most of the data is from hospital based and population based studies are limited. Hence the present investigation was undertaken to assess the prevalence and correlates of hysterectomy in a randomly selected free living 403 women aged between 15 to 50 years from Chittoor District of Andhra Pradesh. The prevalence of hysterectomy was 5.2 percent (Mean age: 36.57 ± 6.95). Hysterectomy prevalence was found to be 2.5 percent in 30 to 39 yrs age group and rose to 16.8 percent in >40 yrs age group. Women with >40 yrs of age were 7.7 times at risk towards hysterectomy when compared to 30 to 39 yrs of age. Women with no formal education were 3.88 times to have had hysterectomy than women with formal education. The occurrence of hysterectomy was significantly associated with age at menarche >16 years (OR: 6.30). The study highlight that the strongest correlates of hysterectomy were: >40 years of age, illiteracy and age at menarche >16 years. In conclusion the results infer that improving socioeconomic factors of the women may have sizeable effects in the mitigation of hysterectomy.

**Keywords:** Hysterectomy; Rural women; Socioeconomic status

## Introduction

Hysterectomy, the surgical removal of uterus, is one of the most frequently performed surgeries in many parts of the world including India [1,2]. Hysterectomy found to have adverse health effects on physical, social and psychological health [3,4]. Hysterectomy prevalence varies across the regions due to socio-cultural reasons, patient factors and uterine pathology [5,6]. Developed countries are witnessed with elevated rates of hysterectomy compared to developing countries [5]. Erikson et al. [7] reports that the prevalence rate of hysterectomy in United States was 26.4%. The prevalence rate in Australian community based study was 16.9 to 22 percent among the women aged between 18 to 69 years [8]. In the recent past the hysterectomy rates have declined in developed countries [6] and on the other side the rates in developing countries appears to rise [9].

Statistics clearly indicates that the prevalence of hysterectomy is increasing in India [10]. Singh and Arora [11], reports that the incidence of hysterectomy was 7 percent among the married women above 15 years of age in Haryana State of India. In another study by Desai et al. [12] observed that 7 to 8 percent of rural and 5 percent of urban women undergone hysterectomy in Gujarat State of India. The prevalence of hysterectomy was observed to be 32.5 percent among cross cultural population data from pilgrims of Tirumala, Andhra Pradesh [10].

Gynecological ailments such as: Fibroids, dysfunctional ailments, uterine bleeding and uterine prolapsed are some of the common medical indications for hysterectomy [13]. In the recent past several studies have indicated that hysterectomies were performed without any scientific justifications that too among the poorer communities [10,14]. A study by Desai et al. [5] in rural Gujarat highlighted that hysterectomy found to be significant towards hospitalization and insurance claims. The existing information indicates that causes for hysterectomy are multi-factorial. An overview of the studies indicates that comprehensive understanding of hysterectomy prevalence and its correlates at population based studies were lacking in India. Much of the data on hysterectomy prevalence in India is not available to assess factors that contribute for the high rate. India being multiethnic and multilingual, regional variation is quiet obvious to draw uniform conclusion. In the light of this background, we assessed prevalence and correlates of hysterectomy in the women aged 15 to 50 years from Chittoor District of Andhra Pradesh.

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## Methods

The design of the study was cross sectional in nature. A multistage random sampling technique was applied to draw the sample. There are three revenue divisions in Chittoor District. All the revenue divisions were taken into consideration. Each revenue division consists of 22 mandals of which two mandals were randomly selected from each division. In each mandal, 2 villages were randomly selected. In the selected villages 705 houses were enlisted. Door to door survey was carried out to recruit the sample. 403 women gave consent to participate in the study. Pilot study was conducted for befriending and explaining to the women participants the purpose of the study. The exclusion criteria were women with lactation, women who had undergone surgical menopause and having gross abnormality. The study was approved by the Departmental Ethics Committee of Sri Venkateswara University, Tirupati. Electoral roles were checked to ascertain the age of the participant to establish the correct age. Each person was interviewed privately at her residence and encouraged to describe any other health related problems she may have faced in her life.

Standard social survey methods like structured interview schedule, and in-depth interviews were used to collect the data. A schedule consisting of multidimensional questions on individual's demographics, like age, age at menarche, age at marriage, life styles, fertility, education, occupation and income was procured. Information about women's perception on their own health problems, menstrual hygiene, menstrual problems, regularity of the cycle, and use of hormonal contraceptives, bowel habit and prevalence of self reported hysterectomy were collected.

Educational level of the participants and their family income were recorded through their public distribution cards. Physical activity was assessed based on subjects occupational and leisure time activities. Participants were requested to recall their first experience of menstrual bleeding to ascertain the age at menarche. Information on age at marriage, first and last pregnancies, and number of pregnancies was gathered. Menstrual cycle length was defined as the gap between first day of one bleeding episode to previous day of next bleeding episode. Duration of menstrual flow was defined as the number of days from first bleeding initiation to last bleeding. Further, different problems related to menstruation were enquired. Precautionary measures were taken to check the recall bias on self reported information provided by the subject.

Statistical analysis was carried out via SPSS 16.0 and alpha level was set at  $p < 0.05$ . Qualitative variables were provided with percentages. Chi square test has been applied to see the strength of association with independent variables. Age adjusted multivariate (binary) logistic regression model with forward conditional entry was employed in predicting the hysterectomy. The independent variables entered were education, income, physical activity, duration of menstrual flow and menstrual problems.

## Results

The prevalence of hysterectomy in the present study was 5.2 percent (Table 1). The mean age of the subjects with hysterectomy was  $36.57 \pm 6.95$  ranging between 25 to 48 years. The prevalence of hysterectomy increased from 2.5 percent among women aged 30 to 39 years to 16.8 percent among women aged >40 years.

No hysterectomy was performed among the women with higher

**Table 1:** Prevalence of hysterectomy under the study population.

	Hysterectomy	
	Frequency	Percent
Yes	21	5.2
No	382	94.8
Total	403	100

education. The prevalence of hysterectomy among the women with secondary education was 2.8 percent increased to 7.7 percent among women with primary education and further increased to 10.0 percent among the women who have no formal education.

The prevalence of hysterectomy was nil among the women working in public or private sectors. The prevalence of hysterectomy was 2.8 percent among the house wives increased to 7.7 percent among the women involved in coolie and further increased to 14.0 percent among the women involved in agricultural works.

The prevalence of hysterectomy was nil in high income group. The prevalence among middle income women was 2.7 percent increased to 7.7 percent among low income women. The prevalence with good self reported health women was 4.5 percent increased to 6.3 among women with fair self reported health further increased to 16.7 percent among poor self reported health.

The prevalence of hysterectomy was nil among the women who attained menarche <11 years. The prevalence was 5.0 percent among the women attained menarche at 12 to 13 years and increased to 7.8 percent in 14 to 15 years with increase to 25.0 percent in >16 years. Similarly the prevalence was 6.1 percent among the women with first conception in between 22 to 24 years, decreased to 3.9 percent in 19 to 21 years with further elevation to 8.3 percent among women whose first conception was <18 years. When total conceptions were taken into consideration the prevalence was least (1.9%) among women with two conceptions. The hysterectomy prevalence was 5.9 percent with one conception, 7.1 with three conceptions and 11.5 with >4 conceptions.

As Table 2 shows, women with >40 years of age were about 7.7 times as likely to have a hysterectomy as women in 30 to 39 years of age. Women with no formal education were most likely to have had hysterectomy: The prevalence odds ratios for illiterates and primary education relative to secondary education was 3.88 and 1.33, respectively and it was statistically significant among illiterates. Low income women were 3 times (95% CI: 0.95, 11.41) likely to have hysterectomy when compared to middle income women. The prevalence odds ratio for poor and fair self reported health was 4.20 and 2.97 respectively compared good self reported health. A statistically significant association was found between age at menarche (>16 years) and hysterectomy (OR=6.30; 95% CI: 1.13, 34.89). The odds ratio was 3.95, 1.60 and 2.08 among the women attained menarche in between 14 to 15 years, age at first conception <18 years and total conceptions >4 respectively.

## Discussion

The average age of the women with hysterectomy in the present study was 37 years. Further the study highlights that the strongest correlates of hysterectomy were >40 years of age, illiteracy and age menarche >16 years. Our results were in best agreement with the findings of Palmer et al. [15] and on African-American women and District Level Household Survey of India [2]. Studies from India also

**Table 2:** Prevalence of hysterectomy in different age groups.

Variable	Women with hysterectomy N (%)	Women without hysterectomy N (%)	Prevalence odds ratio	95% Confidence interval
Age of the subjects				
<29 yrs	0 (0)	145 (100)		
30-39 yrs	4 (2.5)	153 (97.5)	1.0 (Ref)	
>40 yrs	17 (16.8)	84 (83.2)	7.741*	2.523, 23.755
Education				
Illiterates	12 (10.0)	108 (90.0)	3.822*	1.310, 11.151
Primary	4 (7.7)	48 (92.3)	1.333	0.409, 4.346
Secondary	5 (2.8)	172 (97.2)	1.0 (Ref)	
Higher	0 (0)	54 (100.0)		
Occupation				
Agriculture	8(14.0)	49 (86.0)		
Coolie	9 (8.3)	99 (91.7)		
Housewife	4 (2.1)	185 (97.5)	1.0 (Ref)	
Employee	0 (0)	49 (100.0)		
Income of the subject				
Low (<49,999 INR)	18 (7.7)	215 (92.3)	3.293	0.950, 11.410
Middle (50000-99999 INR)	3 (2.5)	118 (97.5)	1.0 (Reference)	
High (>100000)	0 (0)	49 (100.0)		
Self rated health				
Poor	1 (16.7)	5 (83.3)	4.2	0.457, 38.592
Fair	7 (6.3)	104 (93.7)	2.971	0.304, 29.032
Good	13 (4.5)	273 (95.5)	1.0 (Ref)	
Age at menarche				
< 11 yrs	0 (0)	73 (100.0)		
12-13 yrs	11 (5.0)	208 (95.0)	1.0 (Ref)	
14-15 yrs	8 (7.8)	95 (92.2)	3.958	0.684, 22.903
> 16 yrs	2 (25.0)	6 (75.0)	6.303*	1.138, 34.896
Age at first conception				
<18 yrs	9 (8.3)	99 (91.7)	1.605	0.494, 5.216
19-21 yrs	7 (3.9)	173 (96.1)	0.714	0.230, 2.218
22-24 yrs	5 (6.1)	77 (93.9)	1.0 (Ref)	
>25 yrs	0 (0)	21 (100.0)	---	----
Total conceptions				
0	0 (0)	14 (100.0)	---	---
1	2 (5.9)	32 (94.1)	1.0 (Ref)	
2	3 (1.9)	159 (98.1)	0.302	0.048, 1.880
3	10 (7.1)	131 (92.9)	1.221	0.255, 5.851
>4	6 (11.5)	46 (88.5)	2.087	0.396, 11.005

\*p&lt;0.05

indicate that the most common age group undergone hysterectomy was above 40 years as observed in the present study [10-12]. A cross examination of the statistics on hysterectomy prevalence in India visualizes that the rates were increasing with significant regional variation, warrants the need to assess the causative factors.

It the present study illiterate women had had higher rate of hysterectomy. Similar results were published in elsewhere population groups [15]. The First National Health and Nutrition Examination survey (NHANES I) epidemiologic follow-up study [16] and

Behavioral Risk Factor Surveillance Survey indicate that hysterectomy is most common among women with least education [17]. Overall hysterectomy was positively associated with age, illiteracy and late age at menarche. Our study indicates that most important correlates of hysterectomy in our sample are same as observed in US white population [15].

In our sample, hysterectomy was weakly associated with number of births and early age for first conception. Early age at first birth is a history of uterine fibroids, and a history of endometriosis. A cross

examination of the results indicate that the association of hysterectomy with educational level was strongest in those taking place after the age of 40 years. The positive association of education with hysterectomy may open up alternatives to surgery in the management of hysterectomy. The present finding of increased prevalence odds ratio associated with late age menarche is deviating from the findings of NHANES I epidemiologic follow-up study [16] and the random sample from Pittsburgh [18], however the associations were weak in the above studies.

Though the present study was random sample, but it can't be represented the region/country specific prevalence rate of hysterectomy. The analysis was carried out based on the self reported information provided by the subjects, which may yield misclassification of the hysterectomy status. Precautionary measures were taken to minimize bias while collecting the information from subjects. Hysterectomy pose great burden to the individual and community in view of its medical management [19]. In conclusion the results infer that improving socioeconomic factors of the women may have sizeable effects in the mitigation of hysterectomy.

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