

Prevalence of fecal incontinence among women in a rural community in Southern India

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ABSTRACT

Background: The prevalence of fecal incontinence (FI) in the community is usually grossly underreported. There are very few studies done in the Asian population to assess FI. **Objective:** Our study aimed to assess the prevalence and the factors associated with FI in adult females aged 30–60 years in a rural community in south India. **Materials and Methods:** We conducted a community-based cross-sectional study among 200 people in three villages (Allivaram, Thoppanthangal, and Veppampet) in Kaniyambadi block, Vellore district, Tamil Nadu. Participants were recruited into the study after informed consent. Information about demographic details, comorbidities, and risk factors for FI was collected using a structured pilot-tested questionnaire. Revised FI Scale (RFIS) was used for evaluation and grading of FI. **Results:** Our study reports the community prevalence of 1.5% (3/200) with 95% confidence interval (0.05, 2.95) for FI using the RFIS scale. The women who were identified to have FI were referred to the secondary hospital for further evaluation and management. All the women who reported FI had a history suggestive of local anal conditions/surgery. Only “passing blood in stool” was statistically significant with FI in logistic regression. Multiple vaginal deliveries or associated obstetrical injuries did not show any association with FI. **Conclusions:** Large-scale multicenter studies are required to assess the prevalence and social burden caused by this disabling condition.


KEY WORDS: Fecal Incontinence; Prevalence; Community Study; Females

INTRODUCTION

Fecal incontinence (FI) is defined as “*the uncontrolled passage of feces or gas over at least 1 month duration, in an individual of at least 4 years of age, who had previously achieved control.*”^[1] It can also be defined as the unintentional loss of solid or liquid stool, while anal incontinence includes

leakage of gas and/or FI.^[2] It is a psychological and socially debilitating condition in an otherwise healthy individual. It can lead to social isolation, loss of self-esteem, self-confidence, and depression, thus affecting quality of life.^[2,3]

Lack of effective and appropriate treatment modalities coupled with chronic disabling symptoms has led to recognition of FI as an economic and public health issue.^[4,5] The reported prevalence in literature ranges from 7% to 15% among men and women, respectively, in the general population.^[2] These rates, however, differ based on the target population measured, the method used to estimate prevalence, the questions used, and the definition of incontinence used.^[1,2]

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The prevalence of FI in the community is usually grossly underreported.^[2] There are very few studies done in the Asian population to assess FI. The rates in these studies vary from 1.3% in Chinese women to 10.4% in Qatari women.^[6] There are no studies to elicit the prevalence of FI of women in an Indian rural community (to the best of our knowledge). Our study aimed to assess the prevalence and the factors associated with FI in adult females aged 30–60 years in a rural community in south India.

MATERIALS AND METHODS

Study Design and Methods

We conducted a community-based cross-sectional study among 200 people in three villages (Allivaram, Thoppanthangal, and Veppampet) in Kaniyambadi block, Vellore district, Tamil Nadu. The study was done as a part of the research project in the community health posting of a group of medical interns in November–December 2015. The interns were led by post-graduate students and faculty from the department of Community health and Surgery. The study design and protocol were reviewed by the faculty. The study was done as per ethical standards, and permissions were taken from local authorities to carry out research in the community. The villages were selected by simple random sampling from the list of 82 villages in Kaniyambadi block. In each of the three villages, systematic random sampling was used, and every third house was approached for participation. Our inclusion criteria were adult women between the ages of 30 and 60 years. If there was no woman in the household in that age group, the next household was approached.

Participants were recruited into the study after informed consent. Information about demographic details, comorbidities, and risk factors for FI was collected using a structured pilot-tested questionnaire. Revised FI Scale (RFIS) was used for evaluation and grading of FI. The RFIS scale was chosen as literature suggests that it has a good internal reliability and can be used as an initial assessment tool in research and clinical practice.^[7] The scale has five items, each scored on a Likert scale from 0 to 4. The RFIS scale classifies FI as mild,^[4-6] moderate,^[2,7-11] and severe (≥ 13).^[8] The scale is depicted in Table 1.

The questionnaire was administered by the research team in the local language. It was translated and back-translated for this purpose. The questionnaire used is attached in Annexure 1. The women who were identified to have FI were referred to the secondary hospital for further evaluation and management.

Sample size was calculated using the formula $4PQ/d^2$ using an estimated prevalence of FI at 20%.^[2] The required sample size was 400. Due to logistics, a sample size of 200 could be achieved. Hence, a limitation of our study is that inadequately powered to estimate the prevalence of FI.

Statistical Analysis

Quantitative variables were expressed as percentage or means, as applicable. Univariate analysis was done, followed by logistic regression, to determine factors associated with the prevalence of FI.

RESULTS

A total of 200 women were recruited from the three villages. The village specific distribution was as follows: 71 (36%) were from Veppampet, 61 (30%) were from Thoppanthangal, and 68 (34%) were from Allivaram. The mean age of the study participants was 42.65 years (SD 10.3 years). 81% of women were homemakers followed by 16% who worked as daily wage laborers. Most women had either two (40%) or three (42%) children.

The data pertaining to the risk factors and the RFIS are presented in Table 2.

The risk factor profile of participants was thus: 25.5% had diabetes, 0.03% had a history of head trauma (2–25 years before study), and none had a history of stroke/spinal trauma. To rule out false incontinence, we had collected data on the following: 5 (2.5%) had history of passing blood in stool,

Table 1: Revised fecal incontinence scale scores

Questions
Do you leak, have accidents or lose control with solid stool?
Do you leak, have accidents or lose control with liquid stool?
Do you leak stool if you don't get to the toilet in time?
Does stool leak so that you have to change your underwear?
Does bowel or stool leakage cause you alter your lifestyle?

Table 2: Baseline characteristics of participants

Characteristics	Frequency (%) or mean (SD) (n=200)
Age of participants in year	42.65 years (10.3 years)
Education in years	6.04 years (3.75 years)
Occupation: Homemaker	162 (81)
Occupation: Daily wage laborer	32 (16)
Diabetes mellitus	51 (25.5)
History of head trauma	6 (0.03)
History of stroke	Nil
History of spine trauma	Nil
Mode of delivery	
Only one vaginal delivery	6 (3)
Only one assisted vaginal delivery	1 (0.5)
≥ 2 Vaginal deliveries	153 (76.5)
≥ 2 Vaginal deliveries with at least one assisted vaginal delivery	24 (12)
≥ 2 Cesarean section	16 (8)

Table 3: Association of risk factors with fecal incontinence

Factors	Fecal continence present (n=3)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age >40 years	1 (33.33)	0.50 (0.04, 5.54)	1.64 (0.13, 21.52)
Nature of work (Heavy worker)	1 (33.33)	2.37 (0.21, 26.9)	4.93 (0.27, 91.07)
More than equal to 2 vaginal deliveries=at least one assisted vaginal delivery	2 (66.7%)	0.24 (0.02, 2.78)	0.15 (0.001, 2.84)
Diabetes mellitus	0 (0)	0.98 (0.95, 1.00)	<0.0001

17 (9%) had pain while passing stool, 5 (2.5%) had history of surgery in the anal region, and 2 (1%) had history of mass/tag in the anal region. Furthermore, 93 (46.5%) practice open defecation and 105 (52.5%) use an “Indian style” toilet pan, i.e., 198 (99%) of the participants squatted while defecating. The nature of most of the daily chores for 194 (97%) of the women like cooking and washing vessels/clothes involved sitting in the squatting position.

The prevalence of FI among the participants using RFIS scoring was 1.5% (3/200) with 95% confidence interval (CI) (0.05, 2.95). Two of the three women had moderate FI (RFIS score 7–12) and one woman had severe FI (RFIS score \geq 13). Two of the three women who reported FI had features of false FI. One had a history of anal surgery and another had a history suggestive of hemorrhoids.

Unadjusted odds ratios were calculated to assess the association of risk factors with FI. The results are shown in Table 3. None of the risk factors were found to be significantly associated with FI. We checked if self-reported symptoms/anal region surgery was associated with FI. The results of which are presented in Table 3. All self-reported symptoms and history of anal surgery were found to be statistically significant with FI, but only passing blood with stool remained statistically significant on logistic regression.

DISCUSSION

Our study results can be summarized as follows: The community prevalence of FI was found to be 1.5% (3/200) with 95% CI (0.05, 2.95) using the RFIS scale. All the women who reported FI had a history suggestive of local anal conditions/surgery. Only “passing blood in stool” was statistically significant with FI in logistic regression. Multiple vaginal deliveries or associated obstetrical injuries did not show any association with FI.

Our study’s results were compared to another community-based study of women in the reproductive age group. In this study, done in Switzerland, the prevalence of FI was 4.4%. While in a geriatric population in a nursing home, it was as high as 50%.^[9,10] In another study done in Malaysia, a convenience sample of patients visiting the obstetrics and gynecology department of a tertiary care hospital was studied for the prevalence of FI, which was found to be 8.3%.^[6] In our study, the prevalence of FI was comparable to another study done in

the community in the UK. This study reported a prevalence of 1.4% major incontinence among 15904 participants.^[11] Studies done in the outpatient/health center setting in Korea and USA reported higher prevalence of 6% and 12%, respectively.^[12,13] A thorough literature search revealed that there has been no prevalence study in the community in India. In our study, none of the risk factors were significantly associated with FI. However, in other studies, after adjusting for age, comorbid illnesses, and body mass index, independent risk factors for FI among women were found to be chronic diarrhea, depression, white race, and urinary incontinence.^[2] Other risk factors included physical factors such as immobilization and use of physical restraints; chronic medical conditions such as diabetes mellitus, Parkinson’s disease, stroke, and urinary incontinence; surgical procedures such as lateral anal sphincterotomy, fistulotomy, or ileal pouch reconstruction; and obstetric factors such as prior vaginal delivery. Routine screening among patients for FI using leading questions may be helpful in identifying “silent sufferers” of FI.^[10,14]

Our study’s strength is that it is one of the first (to the best of our knowledge) studies to measure the prevalence of our FI, as a community-based study in India. Some of the probable explanations for low prevalence in our study, as compared to other studies done in the world, could be as follows. Most of the women who were surveyed are involved in activities that engage the pelvic floor muscles, like squatting, lifting heavy water containers, and commodities, daily. This could have a benefit by way of strengthening their pelvic floor muscles and thus mitigate the effect of muscle damage caused by delivery. The surveyed areas are predominantly rural in socioeconomic status. In such a socioeconomic scenario, a “low-grade” leak may not be perceived as a significant. This may not have been picked up by the RFIS scoring system that was used in this study. In addition, the study team may have been perceived as newcomers in the village. The people may have been reluctant to reveal “private” details, leading to a decreased reported prevalence of FI. Furthermore, our study’s limitation is that it is not adequately powered to estimate the prevalence of FI, as the planned sample size was not achieved. The generalizability of our study may be limited to the Southern part of rural India. Extrapolating these results to the whole nation may not be advised as the living conditions are very different across states.

We conclude that the prevalence of FI in a rural community in Southern India was 1.5%. A multicenter community

prevalence study would add to the literature on the prevalence of FI in India.

CONCLUSIONS

The prevalence of FI among women in a rural community in Southern India was 1.5%, 95% CI (0.05, 2.95). Large-scale population studies are required in India to assess the prevalence and social burden caused by this disabling condition.

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