Gynaecological Morbidity among women beedi workers in rural areas of Nizamabad district, Telangana

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Abstract

Background: Beedi rolling is the popular small scale industry in Telangana which provides employment to over 1 million people. Although the risk of many diseases exists among beedi rollers, little information is available about gynaecological problems and their associated risk factors.

Objectives

1.To study the prevalence of gynaecological morbidity among women beedi workers in rural areas of Telangana.
2. To study the risk factors associated with gynaecological problems in the study population.

Settings and Design: Community based cross sectional study

Methodology: Multistage stratified random sampling method. After sample size calculation 560 people were interviewed in 14 different villages, out of which 528 responses were complete. The questionnaire consisted of details regarding socio demographic history, occupational exposure history, personal habits, clinical history and general examination findings. Statistical analysis used: Epi info 7.1 and Microsoft excel Windows version 17

Results: Forty two percent of the women were suffering from various gynaecological problems. Most of them have undergone hysterectomy for menorrhagia and other symptoms. This study also found a strong association between increasing age, increasing experience in beedi rolling and gynaecological morbidity. Beedi workers who were not following hygienic hand washing practices were also more prone to gynaecological problems than the ones who were following better hygienic practices.

Conclusions: The women beedi workers who are constantly exposed to tobacco dust are prone to various morbidities including gynaecological morbidity. Further research is needed to establish the role of other risk factors in the women beedi workers.

Key-words: Gynaecological morbidity, beedi rollers, natural menopause, surgical menopause.

Introduction

Workers all over the world face several health hazards due to the poor environmental conditions or due to the lack of basic services at the workplace. Unorganized sector constitutes almost 80% of the employment in India. 1 Women form an integral part of workforce in this sector especially in rural areas. Most of them earn their livelihood from agriculture, construction work, beedi rolling, agarbathi making, papad making, tailoring, embroidery work etc. 1 Workers in this unorganized sector are more prone to occupational hazards due to lack of monitoring and difficulties in maintaining the prescribed standards. Beedi rolling is one such semi organized or unorganized sector in Telangana state which provides employment to over 1 million people. 2 Telangana is the largest beedi producer after Madhya
Pradesh. Most of the women beedi workers in the state of Maharashtra are also Telugu speaking people which is a regional language of Telangana state. The task of beedi rolling is generally done by women and girls sitting at home. Most of the women are from backward, scheduled castes and tribes belonging to low income group. Despite the work being labour-intensive, women continue to do it as they are less aware of other sources of livelihood. They are prone to various diseases such as musculoskeletal problems, respiratory morbidity, gastrointestinal disturbances, eye problems, throat irritation, gynaecological problems etc. Though there were some studies reporting prevalence of gynaecological problems among beedi workers, there are very few studies regarding the risk factors for these problems. Hence this study was intended to find the prevalence and relation between various potential risk factors and gynaecological morbidity.

**Objectives**

1. To study the prevalence of gynaecological morbidity among women beedi workers in rural areas of Telangana.
2. To study the risk factors associated with gynaecological problems in the study population.

**Methodology**

This was a community based cross sectional study conducted among women beedi workers residing in rural areas of Telangana state. There were 10 districts in Telangana state in 2015 when the study was conducted. Out of 10 lakh beedi workers in the state, almost half of them (4,46,524) are employed in Nizamabad district alone (officially registered, Source: Asst.P.F commissioner EPFO, Nizamabad 2009-10). If the unregistered workers are also taken into account the actual number of people involved in beedi making will be much higher. In 2006 the Indian government also named Nizamabad one of the country's 250 most backward districts. This district was divided into three revenue divisions, Bodhan, Kamareddy and Nizamabad. These were sub-divided into 36 mandals and 922 villages. Taking 20% as the anticipated prevalence as per the pilot study done in February 2015, with a 95% confidence interval the sample size was estimated to be 256. Since the sampling procedure to be used was multistage stratified sampling, a design effect of 2 was used to estimate the final sample size. After adding the non response rate of 10%, sample size was finalized to 560. Study was conducted for a period of one year, in 14 villages selected from 7 mandals from November 2015 to October 2016. Already existing 3 revenue divisions of Nizamabad district were taken as strata. Mandals were considered as Primary sampling units (PSU) (7 mandals were selected). Villages were considered as Secondary sampling units (SSU) (14 villages were selected). Households were considered as Tertiary sampling units/elementary units (TSU). From each village 40 households were selected by right hand rule method to attain a sample size of 560. Final units of selection were Beedi workers. One woman per household whoever was more experienced in beedi rolling and available at the time of study was included. The eligible women were given participant information sheet and informed consent form in local language. Semi structured questionnaire was also administered in the local dialect. A total of 560 women were interviewed during the study, from which 528 responses were complete. Data was entered in Microsoft excel, Windows, Version 17.0. and analyzed in Epi Info 7 (Centre for Disease Control and Prevention, Atlanta, Georgia, USA). The study was approved by the Institute Ethics Committee of Osmania Medical College, Hyderabad.

**Results**

Of the study population, 41.9% of the women were suffering from gynaecological problems. Almost half of
the women(43%) were in natural or surgical menopause at the time of study(Table 1). Most common complaints by women who have not attained surgical or natural menopause were irregular menstruation and menorrhagia(8.36%) followed by infertility(5.38%). The other complaints were foul smelling vaginal discharge and itching, 3 or more abortions in the past, lower abdominal pain, diagnosed cases of uterine fibroids and ovarian cysts(Table 2). Mean age at which hysterectomy was done in the study subjects was 33 years with Standard Deviation of 7.14 years. Most of the women(31%), were hysterectomized before 30 years of age(Table 3). Major reasons for which the subjects have undergone hysterectomy were foul smelling white discharge followed by menstrual problems. Reasons for hysterectomy as cited by the subjects are shown in Chart 1. Of all the hysterectomies done, 20.6% were done during 2011-2015, 29% during 2006-2010 and 23% during 2001-2005, 20% during 1996-2000. Before 1996, 7.4% subjects were hysterectomized(Chart 2). Mean age of natural menopause is 44.5 years with standard deviation of 7.97 years. One fifth (21.2%) of the total menopausal women had premature menopause, that is before the age of 40 years. One third (29.6%) of the women had early menopause that is at the age of 40-44 years. Rest of them had menopause at the age of 45 years or more(Table 4). The risk of gynaecological problems increased with increasing experience in beedi rolling. The morbidity was more in women chewing tobacco and in women who had the habit of toddy intake. Morbidity was also more in the women who did not follow proper hand hygiene practices. Association of various potential risk factors with gynaecological morbidity are given in Table 5, Table 6 and Table 7.

**Discussion**

Prevalence of gynaecological morbidity: Almost 42% of the subjects were suffering from some or the other gynaecological morbidity at the time of the study. This correlated well with a study done in Mangalore, which reported that 42% of the beedi workers suffered from obstetric and gynaecological conditions. In contrast to this, a study done in West Bengal reported that 89% of the beedi workers suffered from menstrual irregularities.

Natural and surgical menopause: Out of the 528 subjects, 20.5% of the study population were in natural menopause. Premature menopause and early menopause was significantly higher in the study population compared to normal population. Out of the total women beedi workers who were in natural and surgical menopause, 51.5% had premature menopause, that is before the age of 40 years and 17.9% had early menopause, that is at the age of 40-44 years. A study done in 2007-2008 in Andhra Pradesh state which included both natural and surgical menopausal women, reported that only 8.8% of the women had premature menopause and 28.4% had early menopause. About One fourth (23%) of the study population were hysterectomized for facing gynaecological problems in the past. Mean age at hysterectomy was 33 years with standard deviation of 7.14 years. In this study it was found that 18% of the women were hysterectomized before the age of 25 years. Another study has claimed that there was 20% increase in number of hysterectomy cases in Andhra Pradesh since the insurance scheme known as Aarogyasri was launched in 2007. But in this study it was found that there was only 6% increase in the hysterectomy cases during 2006-2010 compared to 2001-2005. Thus, by the above findings, it seems that occupational exposure to tobacco has positive
relation with gynaecological morbidity following which the women were hysterectomized.

**Infertility**

Infertility was reported by 5.6% of the women who were menstrually active. Infertility and premature menopause were also reported by a study done among beedi workers in Mumbai 13.

**Personal hygiene**

This study found that 72% of the study population did not follow good hand washing practices in concurrence with a study done in Mangalore 14 which also found that the personal hygiene was poor in about 76% of the beedi workers. A study done by Joshi et al 15 also found that there was poor hygiene among 83% of the study population.

**Risk factors associated with gynaecological morbidity:**

Most of the women who suffered from gynaecological morbidity were aged above 35 years, were illiterate and were having the habits of tobacco chewing and toddy intake. The morbidity was more in the women who joined the beedi rolling service at less than 15 years and in women who had completed 20 years of service in beedi rolling than the ones who joined at a later age and had less experience. The symptoms were more in women who worked at home than the ones who worked at factory, this might be due to the fact that the women who were working in factory had the habit of washing their hands with soap when they returned home and resumed to other household activities. Most of the women (72%) either did not wash their hands at all or they did not use soap for hand washing immediately after beedi rolling before resuming into other household activities. These women had more symptoms compared to the 28% of the women who had proper handwashing practices. This might be due to the presence of microbes and fungi in the raw tobacco dust or due to the tobacco dust itself which gained access to the reproductive tract due to the lack of personal hygiene.

**Conclusions:** The present study clearly described that most of the beedi workers were prone to various gynaecological and obstetric problems which also included premature and early menopause. Prevalence of surgical menopause was also significantly higher in them. The results obtained in this study indicate that beedi rollers seem to be facing these problems due to over handling of tobacco dust and lack of personal hygiene. There might be a decrease in gynaecological morbidity, if the workers reduce the habit of tobacco chewing, reduce the toddy intake and follow good hand washing practices (with soap) each time after handling the raw tobacco dust and before going to toilet and resuming to other household activities.

**Limitations:** Bias might have occured in recalling the menopausal age and symptoms for which hysterectomy was done. Confounding factors such as usage of pads/other material at the time of menstruation which contribute to genital tract infections were not addressed. Gynaecological examination was not done due to financial constraints. Further research has to be done to resolve the above issues.

**References:**

6. Wikipedia, the free encyclopaedia [Internet].2016.
7. The World Health Survey (WHS) Sampling guidelines for Participating Countries, Multistage Cluster Sampling.
14.Dr. Ria Ann Thomas1 , Dr. Deepu Chengappa Cheriamane2 , Dr. Irfan3 A cross sectional study on health profile of female beedi rollers in a rural area in Mangalore IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)

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Table 1: Distribution of study subjects according to various gynaecological problems

<table>
<thead>
<tr>
<th>Gynaecological problems</th>
<th>Frequency(n=528)</th>
<th>Percentage(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hysterectomized subjects</td>
<td>121</td>
<td>22.9</td>
</tr>
<tr>
<td>Subjects with gynaecological problems excluding hysterectomized and menopausal women</td>
<td>50</td>
<td>8.3</td>
</tr>
<tr>
<td>Women with premature ovarian insufficiency (Menopausal Age &lt; 40 years)</td>
<td>18</td>
<td>3.4</td>
</tr>
<tr>
<td>Women with early menopause (Menopausal age 40-44 years)</td>
<td>32</td>
<td>6</td>
</tr>
<tr>
<td>Total women who suffered from any kind of gynaecological morbidity</td>
<td>221</td>
<td>41.9</td>
</tr>
</tbody>
</table>
Table 2: Distribution of study subjects according to the symptoms at the time of the study (excluding hysterectomized and menopausal women)

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Frequency (n=299)</th>
<th>Percentage(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menstrual problems</td>
<td>25</td>
<td>8.36</td>
</tr>
<tr>
<td>Infertility</td>
<td>17</td>
<td>5.68</td>
</tr>
<tr>
<td>Other complaints*</td>
<td>8</td>
<td>2.67</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>16.7</td>
</tr>
</tbody>
</table>

Table 3: Distribution of study population according to the age of the subject when hysterectomy was done

<table>
<thead>
<tr>
<th>Hysterectomy at the age of</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 years or less</td>
<td>22</td>
<td>18.1</td>
</tr>
<tr>
<td>26-29 years</td>
<td>16</td>
<td>13.2</td>
</tr>
<tr>
<td>30-34 years</td>
<td>30</td>
<td>24.7</td>
</tr>
<tr>
<td>35-39 years</td>
<td>32</td>
<td>26.4</td>
</tr>
<tr>
<td>40-44 years</td>
<td>9</td>
<td>7.4</td>
</tr>
<tr>
<td>45 years or more</td>
<td>12</td>
<td>9.9</td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 4: Distribution of study population according to the menopausal age

<table>
<thead>
<tr>
<th>Menopause at the age of natural menopause only</th>
<th>Frequency of Prevalence Percentage(%)</th>
<th>Frequency of natural menopause and surgical menopause</th>
<th>Prevalence Percentage(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;30</td>
<td>0</td>
<td>0</td>
<td>38</td>
</tr>
<tr>
<td>30-34</td>
<td>5</td>
<td>4.6</td>
<td>35</td>
</tr>
<tr>
<td>35-39</td>
<td>13</td>
<td>16.6</td>
<td>45</td>
</tr>
<tr>
<td>40-44</td>
<td>32</td>
<td>29.6</td>
<td>41</td>
</tr>
<tr>
<td>45-49</td>
<td>34</td>
<td>31.5</td>
<td>44</td>
</tr>
<tr>
<td>50 years or more</td>
<td>24</td>
<td>22.2</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100</td>
<td>229</td>
</tr>
</tbody>
</table>
Table 5 Sociodemographic factors association with gynaecological morbidity among the workers

<table>
<thead>
<tr>
<th>Socio demographic factors and personal habits</th>
<th>Number of subjects</th>
<th>Frequency of gynaecological morbidity</th>
<th>Prevalence percentage %</th>
<th>Odds Ratio</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;35 years</td>
<td>381</td>
<td>191</td>
<td>50</td>
<td>3.9</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>&lt;35 years</td>
<td>147</td>
<td>30</td>
<td>20.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>356</td>
<td>176</td>
<td>49.4</td>
<td>2.75</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Literate</td>
<td>172</td>
<td>45</td>
<td>26.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio economic status*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower class</td>
<td>473</td>
<td>197</td>
<td>41.6</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Middle class</td>
<td>55</td>
<td>24</td>
<td>43.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal habits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Tobacco chewing</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>99</td>
<td>55</td>
<td>55.5</td>
<td>2</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absent</td>
<td>429</td>
<td>166</td>
<td>38.6</td>
<td></td>
<td>(1.2-3)</td>
</tr>
<tr>
<td>Toddy intake</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Present         | 82              | 49              | 59.7            | 2.36            | <0.001          |
|                 |                 |                 |                 |                 | (1.42-3.84)     |
| Absent          | 446             | 172             | 38.5            |                 |                 |

*BG Prasad Classification

Table 6 Occupational factors association with gynaecological morbidity among the beedi workers

<table>
<thead>
<tr>
<th>Occupational factors</th>
<th>Number of subjects</th>
<th>Frequency of gynaecological morbidity</th>
<th>Prevalence percentage %</th>
<th>Odds Ratio</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at joining the service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;15 years</td>
<td>210</td>
<td>241</td>
<td>5.2</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>&gt; 15 years</td>
<td>11</td>
<td>66</td>
<td>(2.7-1.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed years of service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;20 years</td>
<td>184</td>
<td>185</td>
<td>3.3 (2.2-5)</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-----</td>
<td>-----</td>
<td>-------------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>&lt;20 years</td>
<td>37</td>
<td>122</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Place of beedi rolling**

<table>
<thead>
<tr>
<th>In and around the house</th>
<th>199</th>
<th>264</th>
<th>1.47 (0.85-2.6)</th>
<th>0.08</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Factory</td>
<td>22</td>
<td>43</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7: Association of hand washing practices with gynaecological morbidity.

<table>
<thead>
<tr>
<th>Hand washing practices</th>
<th>Gynaecological morbidity (frequency)</th>
<th>Gynaecological morbidity absent (percentage)</th>
<th>Total (100%)</th>
<th>Chi square and P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Hand washing practice</td>
<td>10(52.6)</td>
<td>9(47.4)</td>
<td>19</td>
<td>Chi-square = 8.5 P = 0.01</td>
</tr>
<tr>
<td>Hand washing without soap</td>
<td>164(45.3)</td>
<td>197(54.7)</td>
<td>362</td>
<td></td>
</tr>
<tr>
<td>Hand washing with soap</td>
<td>47(32)</td>
<td>100(68)</td>
<td>147</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>164</td>
<td>364</td>
<td>528</td>
<td></td>
</tr>
</tbody>
</table>
Chart 1: Health problems for which hysterectomy was done:

Chart 2: Number of hysterectomies done according to calendar years:

Number of hysterectomies done during:

- 2011-2015: 25
- 2006-2010: 35
- 2001-2005: 28
- 1996-2000: 24
- Before 1996: 9