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Original Article

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A Study of Perceptions and Experiences of Pilgrims Approaching Spiritual Masters in a Religious Mass Gathering “Sinhastha” in Ujjain, MP, India to Explore Relationship of Spirituality and Health

Kirti Deshpande¹, Rajesh Deshpande², Dattatray N Paliwal³

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Author’s Affiliation:
¹Professor, Community Medicine;
²Associate Professor, Medicine; ³MSW, Community Medicine, R.D. Gardi, Medical College, Ujjain

Correspondence
Dr. Kirti Deshpande
Kirtiujjain@yahoo.com

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INTRODUCTION
Religious mass gatherings include huge number of pilgrims, religious leaders, spiritual masters and their followers from different backgrounds. As a part of Hindu tradition the largest religious mass gathering throughout the world organized in India is well known as “Kumbh Mela”. This event is specifically named “Sinhastha” when it occurs in Ujjain.

The city of Ujjain has hosted its last “sinhastha” in the year 2016; millions of people attended the event. Such a huge religious mass gathering was seen as an opportunity to explore various human behaviors, especially relationship of spirituality and health. As the spiritual dimension of health is an acknowledged dimension of health besides physical, mental and social dimensions, it is a potential area for research.

Since the beginning of human civilization caring for sick people has been an important matter of concern. Spirituality and health have been integral parts of all the religions. Religious and Spiritual (R/S) beliefs, influence lifestyle, attitudes and feelings about life, pain and death. Religions specify practice about diet, birth control, illness and medical care.

Evidences strongly suggest that, to many patients, R/S are resources that help them to cope up with the stresses in life, including those of their illness, but some religious conflicts and frustrations may be...
contributory to the present problems like abuse by religious workers, traumatic events which turned the patient away from religious beliefs and activities. At times some religious beliefs can disagree with the scientific explanations of disease etiology and treatment. A study exploring relationship between spirituality and health has examined physician’s religious characteristics and reported that patients are likely to encounter quite different opinions, depending on the religious characteristics of their physicians. It is debatable whether and how R/S influences health.

The present study aims to explore the perceptions and experiences of pilgrims approaching spiritual masters in the “Sinhastha” especially for seeking health care and to explore relationship of spirituality and health in a setting of religious mass gathering.

METHODOLOGY

The present study was conducted during the event of “Sinhastha” from 22nd April 2016 to 21st May 2016. There were zones with various settlements of pilgrims and spiritual masters (SM) spreaded within and few kilometres around the Ujjain city. The settlements of spiritual masters were popularly known as ‘Akhada’. These akhadas have many Spiritual Masters (SM) popularly known as “sadhu”, “baba ji”, “guru” or “swami ji” having varied experiences and specialties. Akhadas are religious organizations of different streams of Hindu religion.

Representation of Adult pilgrims, visiting SM of these akhadas and other settlements was planned. A sample size of 1024 was estimated applying the formula \(4PQ/L^2\) with an expected population proportion of 60% and 5% of relative precision at 95% confidence level. 10% of sample size was added to the estimated sample size to adjust the non response and finally rounded off to a final sample size of 1130. Out of total 13 akhadas 7 were “shiv” akhadas, 3 were “vaishnav” akhadas and 3 were “udaseen” akhada. 610 pilgrims included from “shiv” akhadas, 260 from “vaishnav” and 260 from “udaseen” akhadas so as to achieve equal representation from all akhadas. All the pilgrims were contacted by the surveyors and were informed about the study. Those who were available and gave consent were included in the study.

Data collection technique and tools:

Trained research assistants and field assistants surveyed the sinhastha area and collected the data in the allotted area. The eligible study participants were interviewed face to face by them, with the help of a structured questionnaire including questions about following:

Background characteristics of the study participants such as name, address, age, gender, occupation, education, socio economic status, marital status were asked.

Information about purpose of visiting spiritual master, existing health problems, choice of the provider, choice of therapies, reason for choosing spiritual masters, experiences about treatment, cost of treatment, relief in the condition and satisfaction or dissatisfaction and spiritual practices during illness. Perceptions about spiritual masters, benefits and potential hazards, source of information about spiritual masters.

Analysis: Data screened for missing values, incomplete information and final data set was analyzed by comparing proportions, calculating mean and standard deviation and applying chi square test of significance for qualitative variables.

Ethical considerations: Eligible participants were explained the purpose of the study and written informed consent was taken. Confidentiality of the participant information was maintained. Ethical approval was obtained from Institutional Ethics Committee of R.D. Gardi Medical college, Ujjain.

RESULTS

Out of total 1130 pilgrims who participated in the study 870 (77%) were men and 260 (23%) were women with mean age 45 years ±14.7. Majority 855 (75.7%) were rural residents, educated less than 10th standard 730 (64.6%), agricultural labor 732 (64.8%) and had per capita monthly income less than Rs. 2000 with one fourth pilgrims Below Poverty Line (BPL).

<table>
<thead>
<tr>
<th>Characteristic (n=1130)</th>
<th>Physical problems (%)</th>
<th>Mental problems (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender Male (870)</td>
<td>612 (70.3)</td>
<td>258 (29.7)</td>
<td>0.007*</td>
</tr>
<tr>
<td>Female (260)</td>
<td>205 (78.8)</td>
<td>55 (21.2)</td>
<td></td>
</tr>
<tr>
<td>Age &lt;40years (489)</td>
<td>351 (71.8)</td>
<td>138 (28.2)</td>
<td>0.738</td>
</tr>
<tr>
<td>&gt;40years (641)</td>
<td>466 (72.7)</td>
<td>175 (27.3)</td>
<td></td>
</tr>
<tr>
<td>BPL Yes (426)</td>
<td>325 (76.3)</td>
<td>101 (23.7)</td>
<td>0.02*</td>
</tr>
<tr>
<td>No (704)</td>
<td>492 (69.9)</td>
<td>212 (30.1)</td>
<td></td>
</tr>
<tr>
<td>Education &lt;10th class (464)</td>
<td>329 (70.9)</td>
<td>135 (29.1)</td>
<td>0.381</td>
</tr>
<tr>
<td>&gt;10th class (666)</td>
<td>488 (73.3)</td>
<td>178 (26.7)</td>
<td></td>
</tr>
<tr>
<td>Total (1130)</td>
<td>817 (72.3)</td>
<td>313 (27.7)</td>
<td></td>
</tr>
</tbody>
</table>

*statistically significant (p<0.05)
Table 2 - Seeking help from baba ji for other problems by pilgrims 981/1130

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Financial Problems</th>
<th>Family disputes</th>
<th>Court case</th>
<th>No social support</th>
<th>Future of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (759)</td>
<td>254 (33.5)</td>
<td>279 (36.8)</td>
<td>54 (7.1)</td>
<td>77 (10.1)</td>
<td>122 (16.1)</td>
</tr>
<tr>
<td>Female (222)</td>
<td>80 (36.0)</td>
<td>82 (36.9)</td>
<td>15 (6.8)</td>
<td>18 (8.1)</td>
<td>38 (17.1)</td>
</tr>
<tr>
<td>P value</td>
<td>0.263</td>
<td>0.511</td>
<td>0.496</td>
<td>0.222</td>
<td>0.39</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 – 40 yrs (432)</td>
<td>146 (33.8)</td>
<td>164 (38.0)</td>
<td>27 (6.2)</td>
<td>42 (9.7)</td>
<td>43 (10.0)</td>
</tr>
<tr>
<td>&gt; 40 yrs (549)</td>
<td>188 (34.2)</td>
<td>197 (35.9)</td>
<td>42 (7.7)</td>
<td>53 (9.7)</td>
<td>117 (21.3)</td>
</tr>
<tr>
<td>P value</td>
<td>0.469</td>
<td>0.273</td>
<td>0.235</td>
<td>0.528</td>
<td>*0.000</td>
</tr>
<tr>
<td>BPL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes (334)</td>
<td>140 (37.8)</td>
<td>140 (37.8)</td>
<td>20 (5.4)</td>
<td>27 (7.3)</td>
<td>59 (15.9)</td>
</tr>
<tr>
<td>No (647)</td>
<td>194 (31.8)</td>
<td>221 (36.2)</td>
<td>49 (8.0)</td>
<td>68 (11.1)</td>
<td>101 (16.5)</td>
</tr>
<tr>
<td>P value</td>
<td>*0.03</td>
<td>0.324</td>
<td>0.76</td>
<td>*0.03</td>
<td>0.442</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 10th (400)</td>
<td>137 (34.2)</td>
<td>153 (38.2)</td>
<td>22 (5.5)</td>
<td>34 (8.5)</td>
<td>65 (16.2)</td>
</tr>
<tr>
<td>&gt;10th (581)</td>
<td>197 (33.9)</td>
<td>208 (35.8)</td>
<td>47 (8.1)</td>
<td>61 (10.5)</td>
<td>95 (16.4)</td>
</tr>
<tr>
<td>P value</td>
<td>0.482</td>
<td>0.237</td>
<td>0.075</td>
<td>0.176</td>
<td>0.52</td>
</tr>
</tbody>
</table>

Figure in bracket indicate percentage; *Statistically significant – p value<0.05

Table 3: Findings of visit of pilgrims to spiritual master (SM)

<table>
<thead>
<tr>
<th>Findings (N=1130)</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform spiritual activity during illness</td>
<td>1063 (94.1)</td>
</tr>
<tr>
<td>Follow particular SM</td>
<td>520 (46)</td>
</tr>
<tr>
<td>Criteria for selection of SM</td>
<td></td>
</tr>
<tr>
<td>Fame</td>
<td>210 (18.6)</td>
</tr>
<tr>
<td>Personality (appearance and speech)</td>
<td>553 (48.9)</td>
</tr>
<tr>
<td>Family tradition</td>
<td>126 (11.2)</td>
</tr>
<tr>
<td>Magical powers</td>
<td>96 (8.5)</td>
</tr>
<tr>
<td>other</td>
<td>145 (12.8)</td>
</tr>
<tr>
<td>Health care sought for Physical problems</td>
<td>817 (72.3)</td>
</tr>
<tr>
<td>Health care sought for Mental problems</td>
<td>313 (27.7)</td>
</tr>
<tr>
<td>Problems in life other than health for which help sought@</td>
<td>981 (86.8)</td>
</tr>
<tr>
<td>First choice of treatment SM</td>
<td>750 (66.4)</td>
</tr>
<tr>
<td>Taking other treatment simultaneously#</td>
<td>842 (74.5)</td>
</tr>
<tr>
<td>Reasons to seek health care from SM*</td>
<td></td>
</tr>
<tr>
<td>Low cost or free</td>
<td>691 (61.5)</td>
</tr>
<tr>
<td>Convenience</td>
<td>634 (56.1)</td>
</tr>
<tr>
<td>No side effects</td>
<td>517 (45.7)</td>
</tr>
<tr>
<td>No other treatment available</td>
<td>94 (8.3)</td>
</tr>
<tr>
<td>Free treatment given to pilgrims</td>
<td>271 (23.98)</td>
</tr>
<tr>
<td>Mode of payment by pilgrims (n= 859)</td>
<td></td>
</tr>
<tr>
<td>Cash donation</td>
<td>182 (21.2)</td>
</tr>
<tr>
<td>Offering services or gifts</td>
<td>677 (78.8)</td>
</tr>
</tbody>
</table>

@Problems like financial, family disputes, future of children, court cases, no social support & other;
#Treatment like allopathic, ayurvedic & homeopathic;
* Multiple responses

Participants were asked about problems other than health problems for which they sought care from SM. Table 2 shows that 981/1130 (86.8%) had several other problems such as financial problems (unemployment/loan/property issues) 334 (34%), family disputes 361(36.8%), court cases 69(7%), worries about future of children 160 (16.3%) and no social support 95 (9.7%). Financial problems were reported slightly more by females (36% vs 33.5%) and significantly higher among BPL persons (37.8% vs 31.8%, p<0.05). family disputes were reported more by age group 18-40 years (38% vs 35.9%), BPL persons (37.8% vs 36.2%) and in less educated (38.2% vs 35.8%). Court cases as problem, was reported slightly more by males (7.1% vs 6.8%), higher age group (7.7% vs 6.2%), not BPL (8% vs 5.4%) and with higher education (8.1% vs 5.5%). Persons reported no social support were more among males (10.1% vs 8.1%) and not BPL (11.1% VS 7.3%, P<0.05). More females (17.1% vs 16.1%), persons above 40 years (21.3% vs 10%, p<0.000) and not BPL were worried about future of their children.

Apart from seeking care other reasons to visit SM were blessings, satsang (staying with saints), and peace. Table 3 shows information about visits of pilgrims. Almost all (94.1%) perform some spiritual activities during illness such as prayers, rituals like pooja of gods and goddesses, chanting mantra, name of “guru”, “Hanuman chalisa”, “Sunder kand”, “Ramayan path” and fasting. About half (46%) follow a particular SM and personality of SM (48.9%) was the most important criteria to follow. Other criteria were fame of SM (18.6%), family tradition (11.2%) and magical power (8.5%).

Table 1 shows that out of 1130, 817 (72.3%) sought health care for physical problems and 313 (27.7%) for mental problems. Physical problems were significantly more prevalent among women as compared to men (78.8%vs70.3%, p=0.007) and among those below poverty line (76.3% vs 69.9%, p=0.02). Physical problems included mainly pain (backache, headache, joint pain and abdominal pain), asthma, skin problems, piles, infertility, jaundice, renal stones. Symptoms indicating mental problems included mental tension, restlessness, ghost problem, epileptic attacks (Mirgi), bad dreams, unknown fear and disturbed sleep.
Participants were also asked about benefit and harms of approaching SM (Table 4). Getting blessings & affection (81.4%), knowledge of religion (64.4%), earn “punya” (66.5%), improves tolerance (43.5%), learn to forgive (35.3%), feel close to god (31.9%), help to solve problems (21%), helps to keep healthy (49.5%) and helps to know oneself (23.4%). Majority 978 (86.6%) perceive no harm by approaching SM. Only 152 (13.5%) think that SM may cause any harm such as hypnotizing, emotional and financial exploitation, may give wrong treatment, kidnapping, sexual abuse and promoting drug addiction. Sources of information about baba ji were roadside hoardings (35%), newspapers (28%), personal communication 25 % and electronic media. The overall reported experience with SM was good (79%) or average (21%). None reported bad experience.

DISCUSSION

Religion, spirituality (R/S) and health have always been closely associated but have a complex interplay. Evidences have suggested that people with health problems practice various R/S interventions, such as prayers, seeking spiritual support to cope up with their sufferings.1, 5, 6 The present study confirms this as almost all the participants (91.4%) perform R/S activities like prayers, rituals and fasting during their illness. Seeking medical care and using prayer are not mutually exclusive activities. 1,7 Majority (75%) participants seeking health care from SM were also taking treatment from officially recognized systems of medical care such as allopathy, ayurveda and homeopathy. This may be interpreted as their understanding of the facts that R/S activities are not the treatment of their conditions but either have a supporting role or they are the options for treatment when no treatment is available. Since majority of pilgrims were poor and less educated they possibly don’t have access to treatment or cannot afford the treatment. Research studies have shown that R/S influences lifestyle, attitudes and feelings about life, death and pain. It helps people accept reality and plan for future. By providing meaning of life and death, can supply the individual, the family and health professionals with a sense of strength, security and faith during a time of need.1, 8

Participants sought health care from SM more for physical problems (72.3%) than for mental problems (27.7%) in this study. A strong relationship is expected between R/S and mental health but R/S influence physical health through psychological, social and behavioral pathways. Psychological disturbance has adverse physiological consequences that worsen physical health, increase susceptibility to diseases and worsen outcomes. R/S involvement of a person is associated with greater social support. Social support is crucial for, health promotion, disease prevention, seeking health care and patient care during treatment especially in Indian context. Certain health behaviors like diet, physical activity and addictions influence physical health directly. A review of literature suggests that wide range of physical illnesses have been found to be inversely associated with R/S including coronary

Table 4: Perceived benefits and harms from SM (multiple responses)

<table>
<thead>
<tr>
<th>Findings</th>
<th>Pilgrim (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived benefits</td>
<td></td>
</tr>
<tr>
<td>Blessings &amp; affection</td>
<td>920 (81.4)</td>
</tr>
<tr>
<td>Earn punya</td>
<td>751 (66.5)</td>
</tr>
<tr>
<td>Knowledge of religion</td>
<td>728 (64.4)</td>
</tr>
<tr>
<td>Keeps healthy</td>
<td>559 (49.5)</td>
</tr>
<tr>
<td>Improves tolerance</td>
<td>491 (43.5)</td>
</tr>
<tr>
<td>Learn to forgive</td>
<td>399 (35.3)</td>
</tr>
<tr>
<td>Closeness to god</td>
<td>361 (31.9)</td>
</tr>
<tr>
<td>Know self</td>
<td>266 (23.5)</td>
</tr>
<tr>
<td>Solve problems</td>
<td>238 (21.1)</td>
</tr>
<tr>
<td>Perceived harms</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>978 (86.5)</td>
</tr>
<tr>
<td>Hypnotize</td>
<td>68 (6)</td>
</tr>
<tr>
<td>Emotional exploitation</td>
<td>61 (5.4)</td>
</tr>
<tr>
<td>Financial exploitation</td>
<td>53 (4.7)</td>
</tr>
<tr>
<td>Wrong treatment</td>
<td>42 (3.7)</td>
</tr>
<tr>
<td>Drug addiction</td>
<td>40 (3.5)</td>
</tr>
<tr>
<td>Sexual abuse</td>
<td>31 (2.7)</td>
</tr>
<tr>
<td>Kidnapping</td>
<td>19 (1.7)</td>
</tr>
<tr>
<td>Experience – good</td>
<td>854 (75.6)</td>
</tr>
<tr>
<td>Experience – average</td>
<td>276 (24.4)</td>
</tr>
</tbody>
</table>

SM was the first choice as health care provider for 750 (66.4%) of participants. When asked about reasons to select SM for treatment multiple reasons were given like free or less expensive treatment by 691 (61%), easy and convenient treatment by 634 (56%), no side effects by 517 (45.8%) and no other treatment available by 94 (8.3%) participants.

842 participants (74.5%) were taking other treatment along with treatment by SM. Out of these 517 (61.4%) were taking allopathic medicines, 291 (34.6%) were taking ayurvedic treatment and 34 (4%) were taking homeopathic treatment.

Participants informed about various types of remedies advised by SM like, drugs, prayers, “Bhabuti” (which is ash generated during holy rituals called “yagya”), chanting mantra, magical articles like bracelets (kada), lockets (taveez), yoga, gem stones, speech and other rituals including charity work. The charity work suggested by SM included donations, distribution of food or clothes to poor, girl child (kanya bhoj) and animals. Cost of treatment by baba ji ranged from free to Rs. 7000/-. They receive this in the mode of cash donations (21.2%), gifts and services (78.8%).

Participants were also asked about benefit and harms of approaching SM (Table 4). Getting blessings & affection (81.4%), knowledge of religion (64.4%), earn “punya” (66.5%), improves tolerance (43.5%), learn to forgive (35.3%), feel close to god (31.9%), help to solve problems (21%), helps to keep healthy (49.5%) and helps to know oneself (23.4%). Majority 978 (86.6%) perceive no harm by approaching SM. Only 152 (13.5%) think that SM may cause any harm such as hypnotizing, emotional and financial exploitation, may give wrong treatment, kidnapping, sexual abuse and promoting drug addiction. Sources of information about baba ji were roadside hoardings (35%), newspapers (28%), personal communication 25 % and electronic media. The overall reported experience with SM was good (79%) or average (21%). None reported bad experience.
heart diseases, hypertension, infections and cancers.9

In the present study 27.7% participants sought care from SM for mental problems (anxiety, depression, ghosts, epilepsy, and sleep disturbances). Since R/S improves wellbeing, hope, self esteem, sense of control and understanding meaning and purpose of life it protects from mental problems. Mental health problems like depression, anxiety, suicide, substance abuse have been found to have inverse association with R/S 9.

Participants sought care for other problems from SM which confirms their faith in SM. These problems included financial matters, family disputes, court cases, lack of social support and worries about future of their children. It is well known that health problems and other socio economic problems are closely associated. Participants reported that SM offered treatment/solution for their problems which included drugs (unknown), magical items, rituals, fasting, prayer, meditation and charity work. Spiritual interventions, like prayer, meditation have been found to be helpful in improving health conditions. In a study of quality of life in patients with heart failure participants reported prayer is one of the important things to improve the quality of life.10 A study reported that parents who were involved in religious activities were more likely to have marital harmony and better parenting skills.11 Another study has suggested that spiritual meditation is effective in reducing pain.12

A study of medically ill, elderly, hospitalized patients showed that positive methods of religious coping (eg. seeking spiritual support) were associated with improvements in health and negative methods of religious coping (eg. Punishing God re-appraisal) were predictive of decline in health9. Similarly R/S interventions practiced by participants in our study may be beneficial or may be harmful. Researchers have found that some types of R/S coping are positive and some are negative. Positive coping includes collaborative problem solving with god, helping others and seeking spiritual support from society or higher power. Negative coping includes, suffering all responsibility to god, feeling abandoned by god and blaming god for difficulties. Some religious beliefs can be in conflict with the proposed treatment, some religious groups are against any type of treatment some of them may have wrong ideas about causes of diseases which can interfere with the medical treatment of the diseases.2,3,9 Participants in the present study were asked about the perceived benefits and harms of seeking care from SM. Perceived benefits included getting affection, blessings, improving tolerance, learning to forgive, knowing the religion, knowing self, feeling close to god and finding solutions for their problems. Very few (13.5%) think that seeking care from SM may be harmful and the perceived harms include hypnوتize, emotional or financial exploitation, drug addiction, sexual abuse, kidnapping and wrong treatment. Majority pilgrims reported their experience with SM as good (75%) and none reported bad experience with SM. In a study of the influence of R/S on health most physicians believed that R/S often helps patients to cope, gives them a positive state of mind and provides emotional and practical support via the religious community.4

The available literature on relationship of R/S and health suggest that patients perform R/S activities like prayer, meditation, seeking support from spiritual masters. R/S matters a lot for patients and may influence health status and outcomes positively or negatively hence it is suggested that their R/S beliefs and practices should be the part of patient evaluation and should be incorporated in their management plan.1,2,9

The present study findings shows that participants seek health care from SM for physical, mental, social, financial and other problems in their life. Majority of the participants take medical treatment simultaneously with R/S practices. The mass religious gatherings provide good opportunity to explore relationship of R/S and health but this also needs to be explored in other settings. Since India is a country with diverse religious and spiritual groups and their followers there is lot of scope for research in this area. Following are the suggested areas:

1. Studying patient’s R/S backgrounds, their R/S beliefs/practices favorable or unfavorable for their health and treatment outcomes for specific physical and mental health conditions.

2. Understanding of Health professional’s views about concept of incorporating R/S in patient evaluation protocol. Their felt need, experiences with patients with regard to R/S.


4. Research in to different ways to incorporate R/S in patient evaluation and deciding management plan.

5. Studies to assess knowledge, attitude and practices by spiritual masters about various health conditions, their agreements and disagreements about medical treatment.

Limitations: As this study was conducted in a religious mass gathering so all the participants had religious inclination and thus representativeness is a
limitation. Only exit interviews of participants did not inform about treatment outcome.

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REFERENCES


Interventional Knowledge, Attitude and Practice Study Regarding Hepatitis B Virus Infection and its Vaccination Using Educational Video among Health Care Workers

Parul D Shah¹, Tanmay K Mehta², Leena V Patil³

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Author’s Affiliation:
¹Prof & Head; ²Assistant Professor; ³Resident, Dept. of Microbiology, Smt. N.H.L. Municipal Medical College, Ahmedabad

Correspondence
Dr. Tanmay K Mehta
tanmay.smit@gmail.com

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ABSTRACT

Introduction: Hepatitis B infection is a global problem with >350 million carriers in the world. Among health care workers (HCW) prevalence is four folds higher. Objective of the study was to assess the Knowledge, Attitude and Practice (KAP) towards hepatitis B infection and vaccination among HCWs and to assess the impact of educational video on their knowledge and attitude.

Methods: Prospective interventional KAP study was done at a tertiary care hospital using questionnaire survey regarding hepatitis B and its vaccination among 75 participants. A short educational video was shown to them, followed by questionnaire survey of knowledge ant attitude of all the participants.

Results: HCW have poor KAP about some important aspects of hepatitis B and its vaccination. Pre-video KAP mean scores of doctors were highest, followed by Lab. technicians and nurses. Improvement in knowledge and attitude among all three types of HCW were extremely statistically significant (P value < 0.0001, paired t-test) after educational video intervention.

Conclusions: Knowledge and attitude scores were increased after showing them educational video, which shows that training at regular intervals is essential for health care workers.

Key-words: KAP study, Hepatitis B, Hepatitis B Vaccine, Health care workers, Health education video

INTRODUCTION

Hepatitis B infection is one of the major public health problems globally and is the tenth leading cause of death.¹² In India, the prevalence of hepatitis B among the general population ranges from 2 to 8%, which places India in an intermediate endemicity zone. India with 40 million cases, is also the second largest global pool of chronic hep B infections.³

Hepatitis B is an important occupational hazard for healthcare workers.⁴ The risk of infection among medical doctors is two to four-times greater than that of general adult population.⁵ With the increasing number of invasive diagnostic and therapeutic procedures, there is an increasing risk of infection to these vulnerable healthcare workers.⁶ While earlier studies had shown a high prevalence of HBsAg positivity in this health workers (2.21–10%), recent studies have shown a relatively low prevalence (0.4–1.4%).⁷⁻¹²

Enhancing the knowledge about hepatitis B and crafting prevention practice are the major strategies to the prevention of disease to a great extent.¹³ Knowledge and practices of these medical doctors play a key role in prevention of spread of infection; however, many health care providers are unable to recognize access and manage hepatitis B from other forms of hepatitis.¹⁴ Occupational exposure among health care workers (HCWs), through blood products, contamination during medical procedures, unprotected sexual contact, perinatal transmission, intravenous drug use are various modes of transmission for hepatitis B virus (HBV).¹⁵,¹⁶
Hence, present study was carried out with objective to assess the Knowledge, Attitude and Practice (KAP) towards hepatitis B infection and vaccination among health care workers, to provide them knowledge by an educational video and assess video’s impact on their knowledge and attitude.

SUBJECTS AND METHODS

A prospective interventional KAP study regarding hepatitis B virus infection and its vaccination was done among HCW at tertiary care hospital in Ahmedabad from March 2018 to April 2018, after permission from Institutional Review Board.

Total of 75 HCWs voluntarily participated in the study. A written informed consent was obtained from each participant prior to study. Three groups of HCW were included in the study. Group A: Resident Doctors (n=25), Group B: Laboratory technicians (n=25) and Group C: Nurses (n=25).

The tool used for pre intervention data collection was a structured questionnaire contained 30 questions, 10 each for knowledge, attitude and practice regarding hepatitis B and its vaccination.

An intervention in form of short educational video prepared by investigators of the study regarding hepatitis B and its vaccination was shown to all the participants. Post intervention data collection was done using questionnaire containing 20 questions, 10 each for knowledge and attitude regarding hepatitis B and its vaccination.

Knowledge based questions were assessed by giving score 1 to correct answer and 0 to the incorrect answer. A score of 1 was given to positive while 0 was given to negative attitudes. For practice questions, score of 1 was given to correct practice while 0 was given to incorrect practice.

Confidentiality of identity & data was maintained. After collecting the data, it was tabulated before data analysis. Descriptive statistics i.e. percentage, mean and standard deviation was used to describe studied variables. Pre and post questionnaire mean scores was compared to access the impact of short educational video on HCW using paired t-test.

RESULTS

Table 1 shows profile of all 75 health care worker participants with respect to variables like gender, educational qualification, healthcare experience and vaccination status. Female (78.6%) participants were more compared to male participants (21.3%). Of these, 44 % were in 18-29 years age group and 38.6% HCW had experience of 3-10 years.

Table 2 shows the correct response to knowledge based questions of all three groups before and after educational video intervention. Awareness about hepatitis B infection and its transmission was found in 74% (n= 56) of the participants. Poor scores were noted in questions related to hepatitis B vaccine dose, schedule, protection and its anti-HBsAg titre.(Ques. no.5 - Ques. No.10).Knowledge scores were improved after post-educational video intervention, ranging from 84% to 98% respectively.

Table 3 shows the correct response to attitude based questions of all three groups before and after educational video intervention.

Table 1: Socio-demographic profile of participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Participants (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>16 (21.3)</td>
</tr>
<tr>
<td>Female</td>
<td>59 (78.6)</td>
</tr>
<tr>
<td>Age groups</td>
<td></td>
</tr>
<tr>
<td>18-29 years</td>
<td>33 (44)</td>
</tr>
<tr>
<td>30-39 years</td>
<td>29 (38.6)</td>
</tr>
<tr>
<td>40-49 years</td>
<td>11 (14.6)</td>
</tr>
<tr>
<td>50 years and above</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>Health care Experience</td>
<td></td>
</tr>
<tr>
<td>3 years-10 years</td>
<td>29 (38.6)</td>
</tr>
<tr>
<td>11-19 years</td>
<td>27 (36)</td>
</tr>
<tr>
<td>20 years or more</td>
<td>19 (25.3)</td>
</tr>
</tbody>
</table>

Table 2: Correct responses for questions on Knowledge regarding Hepatitis B infection and vaccination

<table>
<thead>
<tr>
<th>Objective of question</th>
<th>Doctor (%)</th>
<th>Lab Technician (%)</th>
<th>Nurse (%)</th>
<th>Total(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode of transmission of hepatitis B</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
</tr>
<tr>
<td>Symptoms of Hepatitis B</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
</tr>
<tr>
<td>Transmission by feco-oral route.</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
</tr>
<tr>
<td>Transmission by biomedical waste handling</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
</tr>
<tr>
<td>Incubation period of hepatitis B infection</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
</tr>
<tr>
<td>Protective efficacy of hepatitis B vaccine</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
</tr>
<tr>
<td>Hepatitis B vaccine schedule</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
</tr>
<tr>
<td>Duration of protection after completion of vaccine schedule</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
</tr>
<tr>
<td>Protective titre required</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
</tr>
<tr>
<td>Time of testing for anti-HBsAg</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
<td>(Prevideo)</td>
<td>(Postvideo)</td>
</tr>
</tbody>
</table>

Figure in parenthesis indicate percentage
Table 3: Positive responses for questions on Attitude regarding hepatitis B infection and vaccination

<table>
<thead>
<tr>
<th>Objective of question</th>
<th>Doctor (%) Pre-video</th>
<th>Post-video</th>
<th>Lab Technician (%) Pre-video</th>
<th>Post-video</th>
<th>Nurse (%) Pre-video</th>
<th>Post-video</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contracting Hepatitis B</td>
<td>23 (92)</td>
<td>25 (100)</td>
<td>18 (72)</td>
<td>24 (100)</td>
<td>15 (60)</td>
<td>25 (100)</td>
<td>56 (74.6)</td>
</tr>
<tr>
<td>Contact first after exposure to blood/blood products infected with HBV</td>
<td>25 (100)</td>
<td>25 (100)</td>
<td>23 (92)</td>
<td>25 (100)</td>
<td>19 (76)</td>
<td>23 (92)</td>
<td>67 (89.3)</td>
</tr>
<tr>
<td>Usage of gloves during blood collection &amp; testing</td>
<td>25 (100)</td>
<td>25 (100)</td>
<td>17 (68)</td>
<td>23 (92)</td>
<td>19 (76)</td>
<td>22 (88)</td>
<td>61 (81.3)</td>
</tr>
<tr>
<td>Requirement of testing before treatment</td>
<td>25 (100)</td>
<td>25 (100)</td>
<td>25 (100)</td>
<td>25 (100)</td>
<td>22 (88)</td>
<td>25 (100)</td>
<td>72 (96)</td>
</tr>
<tr>
<td>Transmission by shaking hands</td>
<td>25 (100)</td>
<td>25 (100)</td>
<td>19 (76)</td>
<td>25 (100)</td>
<td>20 (80)</td>
<td>20 (80)</td>
<td>64 (85.3)</td>
</tr>
<tr>
<td>Effect of vaccine after exposure to contagious fluid/material</td>
<td>11 (44)</td>
<td>25 (100)</td>
<td>16 (64)</td>
<td>25 (100)</td>
<td>13 (52)</td>
<td>21 (84)</td>
<td>40 (53.3)</td>
</tr>
</tbody>
</table>

Only 74.6 % (n=56) thought that they can get hepatitis B infection. We found that 89.3 % (n=67) healthcare workers showed positive attitude towards contacting in-charge physician after exposure to contaminated blood/blood products. Approximately 85%-90% participants were positive towards changing gloves, screening for hepatitis B and to take vaccine before working in healthcare setting. Surprisingly, 30.6% (n=23) participants had negative attitude towards vaccinating a person who has already been infected with hepatitis B. We noted that 90.6% (n=68) participants were willing to participate in health education programs and showed positive attitude towards having vaccine related guidelines in work areas due to accidental injuries. Positive attitude towards shaking hands with case of hepatitis B was noted in 85.3% (n=64) participants. Great shift towards positive attitude was noted in attitudes of healthcare workers after educational video intervention.

Table 4: Correct responses for questions on Practice regarding hepatitis B infection and vaccination

<table>
<thead>
<tr>
<th>Objective of question</th>
<th>Doctor (%) Pre-video</th>
<th>Lab Technician (%) Pre-video</th>
<th>Nurse (%) Pre-video</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening for Hepatitis B?</td>
<td>18 (72)</td>
<td>15 (60)</td>
<td>13 (52)</td>
<td>46 (61.3)</td>
</tr>
<tr>
<td>Use of disposable items for collection</td>
<td>25 (100)</td>
<td>25 (100)</td>
<td>24 (96)</td>
<td>74 (98.6)</td>
</tr>
<tr>
<td>Procedure to clean the spillage of blood</td>
<td>25 (100)</td>
<td>21 (84)</td>
<td>25 (100)</td>
<td>71 (94.6)</td>
</tr>
<tr>
<td>Participation in health education programme</td>
<td>13 (52)</td>
<td>5 (20)</td>
<td>19 (76)</td>
<td>37 (49.3)</td>
</tr>
<tr>
<td>Use of disposable medical gloves while working</td>
<td>25 (100)</td>
<td>24 (96)</td>
<td>24 (96)</td>
<td>73 (97.3)</td>
</tr>
<tr>
<td>A. Non vaccinated against Hepatitis B</td>
<td>24(96)</td>
<td>21(84)</td>
<td>24(96)</td>
<td>67(89.3)</td>
</tr>
<tr>
<td>B. Doses of vaccine received if vaccinated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 dose</td>
<td>0</td>
<td>0</td>
<td>1 (1.3)</td>
<td>1 (1.3)</td>
</tr>
<tr>
<td>2 doses</td>
<td>4 (5.3)</td>
<td>3 (4)</td>
<td>0</td>
<td>7 (9.3)</td>
</tr>
<tr>
<td>3 doses</td>
<td>16 (21.3)</td>
<td>15 (20)</td>
<td>19 (25.3)</td>
<td>50 (66.6)</td>
</tr>
<tr>
<td>more than 3 doses</td>
<td>2 (2.6)</td>
<td>1 (1.3)</td>
<td>3 (4)</td>
<td>6 (8)</td>
</tr>
<tr>
<td>Time of last dose of vaccine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 1 month ago</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1 month - 3 months ago</td>
<td>1 (1.3)</td>
<td>0</td>
<td>0</td>
<td>1 (1.3)</td>
</tr>
<tr>
<td>4 months- 6 months ago</td>
<td>12 (16)</td>
<td>4 (5.3)</td>
<td>0</td>
<td>16 (21.3)</td>
</tr>
<tr>
<td>more than 6 months ago</td>
<td>12 (16)</td>
<td>14 (18.6)</td>
<td>23 (30.6)</td>
<td>39 (52)</td>
</tr>
<tr>
<td>Tested for anti-HBsAg post vaccination</td>
<td>19(76)</td>
<td>17(68)</td>
<td>12(48)</td>
<td>48 (64)</td>
</tr>
<tr>
<td>Titre of anti HBsAg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;10 mIU/ml</td>
<td>13 (17.3)</td>
<td>3 (4)</td>
<td>2 (2.6)</td>
<td>18 (24)</td>
</tr>
<tr>
<td>10-100 mIU/ml</td>
<td>4 (5.3)</td>
<td>3 (4)</td>
<td>1 (1.3)</td>
<td>8 (10.6)</td>
</tr>
<tr>
<td>&gt;100 mIU/ml</td>
<td>2 (2.6)</td>
<td>10 (13.3)</td>
<td>0</td>
<td>12 (16)</td>
</tr>
<tr>
<td>don’t know</td>
<td>2 (2.6)</td>
<td>3 (4)</td>
<td>20 (26.6)</td>
<td>25 (33.3)</td>
</tr>
<tr>
<td>Importance of booster dose</td>
<td>18(72)</td>
<td>17(68)</td>
<td>12 (48)</td>
<td>47 (62.6)</td>
</tr>
</tbody>
</table>

Table 5: Mean score of Response on Knowledge, Attitude and Practice regarding hepatitis B infection and vaccination pre and post intervention.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Knowledge (Mean ± SD)</th>
<th>Attitude (Mean ± SD)</th>
<th>Practice (Mean ± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-intervention</td>
<td>Post-intervention</td>
<td>Pre-intervention</td>
</tr>
<tr>
<td></td>
<td>p value*</td>
<td></td>
<td>p value*</td>
</tr>
<tr>
<td>Gr A: Doctor</td>
<td>4.92 ± 1.28</td>
<td>9.8 ± 0.40</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Gr B Lab. Technician</td>
<td>5.24 ± 1.36</td>
<td>8.76 ± 1.76</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Gr C: Nurse</td>
<td>6.2 ± 1.5</td>
<td>8.2 ± 1.70</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

* Paired t-test
participants had screened for hepatitis B infection and only 89.3% (n=67) had taken vaccine against hepatitis b. While, 98.6% (n=74) participants ask for new syringe and needle before collection of blood/blood products and 97.3% (n=73) wear disposable medical gloves while working. Around 66.6% (n=50) participants has completed the full series of immunization and 64% (n=48) has tested for anti-HBsAg titre. 24% (n=18) people had titres below <10mIU/ml and 62.6% (n=42) doesn’t know the minimum anti-HBsAg titre for which revise vaccination schedule is required.

We found that KAP mean scores of doctors were highest, followed by Lab. technicians and nurses as shown in table 5.

DISCUSSION

Most of the earlier KAP studies conducted in India were observational studies. In present study we implemented an intervention in form of educational video demonstration to all the participants and assess its impact on knowledge and attitude scores. The knowledge level has shown a significant improvement after the training, which is in corresponding to study done by Yasobant et al. Great shift towards positive attitude was also noted in HCW after educational video intervention in present study. Improvement in knowledge and attitude among all three types of HCW were extremely statistically significant (P value < 0.0001, paired t-test) after educational video intervention.

The findings of the present study revealed some interesting facts regarding KAP of HCWs concerning some important aspects of hepatitis B infection. Results showed that HCW especially resident doctors had quite poor knowledge, lab technician had negative attitude and poor practice towards hepatitis B infection which is quite a matter of concern. Level of knowledge about type of hepatitis B and the routes of transmission of the infection varied among the different categories of healthcare personnel which might be due to difference in their level and type of education.

Almost 98.6% of HCW knew hepatitis B is transmitted by virus which is comparable to study done by Reang T et al which showed 99.7% result. In present study 78.6% of participants were aware of symptoms of hepatitis B, similar to study done by Vaig BN et al in which 90.7% knew that. Only, 25.3% of participants were having knowledge about incubation period and 30.6% knew that vaccine is fully protective against hepatitis B. After showing educational video their knowledge increased to 84% and 85.3% respectively. Nearly 94.6% knew that hepatitis B vaccine schedule has 3 doses. In a study done by Reang T et al showed 78.8% had same knowledge. Shockingly, 48% of doctors were unaware of hepatitis B vaccine schedule and anti-HBsAg protective titres. Laboratory Technicians and nurses were also lacking knowledge regarding schedule, immunization status and anti-HBsAg titre levels. Knowledge was improved in 85.3% of participants regarding anti-HBsAg titre after teaching them. However, 92% knew that biomedical waste is important mode for contracting hepatitis B infection if not properly collected and transported. All participants were provided adequate knowledge on hepatitis B and its vaccination through educational video and the results are given in Table 2. It shows that training is necessary in all levels of health care personnel. The findings regarding knowledge level reported were quite similar to that reported in study done Bharti Koria, Biradar SM & S Setia et al.

In a study done by Reang T et al, 86.3% consulted doctor after exposure to infected blood, similar to our study in which 89.3% believed. Another finding in that study showed 80.2% were aware of contracting the disease was similar to ours in which 74.6% of health care workers were aware of. In our study 85.3% participants believed that shaking hands would not transmit the disease. Reang T et al also reported that 72% would not transmit the disease. On the other hand, Swarnalata et al reported that only 44.8% students were aware that it was not transmitted by hand shaking. We noted that 93.3% participants believed that they should receive hepatitis B vaccine. Study conducted by Adela. a. et al, 90.7 % agreed that changing gloves during blood collection is necessary, our study showed result of 81.3%.

In present study, 85.3% of HCW believed that there should be vaccine related guidelines in work area, in comparison to study done by Abdela, a. et al in which 83.3 % agreed to that. Majority (96%) participants had positive attitude toward screening for hepatitis B before receiving any health care which is comparable to study done by Afihene MY et al (89.3%).

Only 74.6% healthcare workers believed that they can get hepatitis B. It is necessary for them to at least know they are vulnerable for contracting hepatitis B. However, most of them (90.6%) gave positive attitude for participating in health training programme. Lack of awareness about effect of vaccination in already infected person was found in 53.3 % of HCW. Most of them had positive attitude towards hepatitis B protection and availability of vaccine related guidelines in all health care departments, so that immediate measures can be taken for post exposure prophylaxis.

Only 61.3% of HCW had screened for hepatitis B antigen, though they showed positive attitude of 96%. Study done by Baig VN et al, also showed that 50% of participants screened for hepatitis B infec-
We found that 89.3% of health care workers had taken vaccine and 41.8% had checked their immunity status.19 In spite of knowing risks, only 89.3% had taken hepatitis B vaccine and amongst them, 66.66% were vaccinated with three doses, which is comparable to study done by Afihene MY et al in which 74.4% had taken vaccine and 41.8% had checked their immunity.20 We found that 89.3% of health workers had taken vaccine, which is similar to study done by Baig VN et al, in which 81.9% had taken vaccine.19 Most of the participants were having appropriate practices related to disposal of gloves and cleaning of floor contaminated with blood. Regarding anti-HBsAg titre, 64% identified their immune status.

CONCLUSION

Results of the current study show that HCW have poor KAP towards hepatitis B virus, with unsatisfactory knowledge about some important aspects of hepatitis B and its vaccination. HCW were unaware and should be encouraged to check their status of post vaccination immunity against hepatitis B virus at regular intervals, because they are in direct contact with the sample and patients. Intervention like short educational video had made a great impact on knowledge and attitude of HCW. Such interventions are economical, time saving and effective, so should be repeated at regular intervals.

REFERENCES

Outbreak Investigation of Unusual Deaths in Cases of Acute Hepatitis Syndrome, in Makronia Municipal Area of Sagar Distirct of Madhya Pradesh

Sunil Kant Guleri1, Amarnath Gupta2, Sunil Nandeshwar3, Shraddha Mishra2, Ramkumar Panika1, Rupesh Sahu1

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Author’s Affiliation:
1Assistant Professor; 2Associate Professor; 3Professor, Dept of Community Medicine, Bundelkhand Medical College, Sagar

Correspondence
Dr. Amarnath Gupta
drangupta@yahoo.com

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ABSTRACT

Introduction: Eleven (11) cases of sudden deaths were reported in patients suffering from jaundice in Sagar district of Madhya Pradesh during March-July 2018. All the cases were HBsAg positive and died due to hepatic encephalopathy and or hepatorenal failure.

Methods: outbreak investigation was done using semi-structured proforma. The clinical history, investigation reports, death certificates and other available documents were analysed and findings recorded. House to house survey and health camps were also organised to find other cases with similar illnesses. The blood samples family members and suspected cases with jaundice were sent to ICMR NIRTH Jabalpur for viral isolations.

Results: All the cases of deaths were localised within an area of about 10 Kms. About 72% cases recorded died within 3 days of illness. Jaundice, abdominal pain and vomiting were the common symptoms. All cases were Hepatitis b surface antigen (HBSAg) test +ve, SGPT raised in 90.90 % cases, SGOT raised in 81.82 cases.

Conclusion: In ICMR NIRTH Jabalpur, reports leptospira positivity was found in 05 cases. There was no other underlying cause except Leptospira co-infection/super-infection which was responsible for such a high fatality in cases with acute Hepatitis.

Key words: Hepatitis B, leptospirosis, co-infection, super infection Hepatorenal Syndrome.

INTRODUCTION

In the municipal area of Makronia under district Sagar outbreak of jaundice caused 11 cases of deaths. The patients died within a period of 01 week from onset of jaundice in spite of treatment at recognised tertiary care hospitals in Sagar and Bhopal (M.P.). Acute hepatitis is generally caused by Hepatitis A and E viruses but mortality is not so high and rapid (Hepatitis A has case fatality rate of less than 0.1 per cent). Hepatitis E generally causes community-level outbreaks, and may rarely cause fulminant hepatitis (acute liver failure) and death. 1 

Acute Hepatitis B Virus Infection: Hepatitis B presents with serum sickness-like syndrome during prodromal period, followed by constitutional symptoms. The jaundice generally disappears after 1-3 months. 2 Liver failure characterized by severe deterioration in liver functions, hepatic encephalopathy, severe jaundice, coagulopathy, and hepatorenal syndrome (HRS) is unusual, occurs in approximately 0.1-0.5% of patients. Fulminant hepatitis B with liver failure is believed to be due to massive immune-mediated lysis of infected hepatocytes. 3 4 In hepatitis B also the sudden acute mortal-
ity is rare. The 5-year survival rates are 97%, 86% and 55% for chronic persistent, chronic active hepatitis and chronic active hepatitis with cirrhosis respectively. The usual cause of death was liver failure and its sequelae. A western European study revealed 5-year survival rate of 71% in HBsAg-positive liver cirrhosis cases.

Co-infections

Co-infection of HCV and HBV, or acute HCV on pre-existing chronic HBV have been reported to increase the risk of severe hepatitis and fulminant hepatic failure. HDV superinfection of a chronic HBsAg carrier may present as a severe acute hepatitis. Hepatitis E infection in a cirrhotic patients is associated with rapid de-compensation and deaths. Human Parvo virus (HPV) B-19 also causes acute hepatitis and fulminant hepatitis specially in immunocompromised cases. Co-infection with leptospirosis and acute hepatitis caused by Leptospira infection may also cause fulminant hepatitis with jaundice, renal failure, and bleeding manifestations (Weil’s disease). Mortality in severe forms remains high even when optimal treatment is provided.

The objective of the study was to identify the cause of jaundice with such rapid de-compensation and death and suggest control measures to health department for limiting the spread of outbreak.

METHODS: OUTBREAK INVESTIGATION

Makronia is an urban area located in Sagar district of Madhya Pradesh. It is almost 5 kms away from the district headquarter. Details of the death cases were obtained from the district health officials. A survey form to review death cases was designed by departmental research committee. The survey form included the details of deceased person like name, age, sex, occupation, date of disease onset, common signs and symptoms, name of consulted physician/place of treatment (hospital), referral details and cause of referral, lab investigation reports for malaria, widal, serum bilirubin, liver function test reports, immunological investigation reports (HBsAg), date and place of death, cause of death as mentioned in death certificate and remarks and additional findings. The survey also included details of history of similar illness in the past, other family members suffering from similar illness, any death in the past six month and cause of death, history of travel, alcohol and drug abuse and other details.

House-to-house survey was done in the identified areas of Makronia i.e. shankargarh, Durganagar, Abhinandan nagar, Ratanganj, Rajakhedi and Village jinda of Makronia. active search of cases was done to identify symptomatic cases, unreported deaths caused by similar illness (acute hepatitis). The details of water supply, sanitation and water testing report for any microbiological contamination and residual chlorine was taken from public health engendering department.

Health camps were organised with the help of health department for screening of patients suffering from jaundice and any other undiagnosed illnesses. The contacts of all the deceased were also screened for HBsAg and other common illnesses malaria, typhoid.

The first reported case of acute hepatitis, from rajakhedi area of Makronia Sagar was admitted in Gandhi Medical college Bhopal for treatment of severe jaundice where he died on the 6th march 2018. He was found widal and HBsAg positive as per medical records. Another case of acute hepatitis died on 16th March In Sagar Sri Hospital of Sagar due to Hepatic Encephalopathy with septicaemia with septic shock with respiratory failure and was HBsAg positive as mentioned in medical records. Similarly other 09 cases of acute hepatitis, HBsAg positive died one after another at different tertiary care hospitals of Sagar and Bhopal within 2 months. Surprisingly in all 11 cases of deaths, HBsAg was positive and all died in short duration of illness due to hepatic failure/encephalopathy. However it was on 22 may 2018, health department after getting reports from media and local news got alert and asked Community medicine department of medical college sagar for investigation of the cause of deaths in patients suffering from jaundice.

House to house survey was initiated on 23rd May 2018 and continued for next 15 days by investigation team of community medicine in Makronia urban area of Sagar and all the available information was collected.

RESULT

The areas where death cases occurred were residential areas of Makronia municipality of district Sagar. The areas have good road connectivity and drainage channels.

The pipeline for supply of water was along common drainage line. So the team has suspicion of water borne viral hepatitis, Hepatitis A or E. All these cases were found to be positive for hepatitis B (HBsAg). The survey found total deaths due to jaundice related illness was 11 and 01 live case of jaundice.

Table 1: Cases and their HBsAg status

<table>
<thead>
<tr>
<th>HBsAg positivity</th>
<th>Death cases</th>
<th>Live cases</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>11</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Negative</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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Table 2: Distribution of death cases according to their Locality

<table>
<thead>
<tr>
<th>Name of Locality</th>
<th>Death Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shankargarh</td>
<td>03</td>
<td>27.27</td>
</tr>
<tr>
<td>Durganagar Rajakhedi</td>
<td>04</td>
<td>36.36</td>
</tr>
<tr>
<td>Abhinandan nagar</td>
<td>01</td>
<td>9.09</td>
</tr>
<tr>
<td>Ratanganj</td>
<td>01</td>
<td>9.09</td>
</tr>
<tr>
<td>Gournagar</td>
<td>01</td>
<td>9.09</td>
</tr>
<tr>
<td>Village jinda</td>
<td>01</td>
<td>9.09</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table 3: Age and sex distribution of death cases

<table>
<thead>
<tr>
<th>Age group</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>2</td>
<td>1</td>
<td>03</td>
<td>27.27</td>
</tr>
<tr>
<td>20-40</td>
<td>5</td>
<td>1</td>
<td>06</td>
<td>54.54</td>
</tr>
<tr>
<td>&gt;40</td>
<td>Nil</td>
<td>2</td>
<td>02</td>
<td>18.18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>07</td>
<td>04</td>
<td>11</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4: Total duration of illness before death

<table>
<thead>
<tr>
<th>Cases</th>
<th>Date of onset of disease</th>
<th>Date of death</th>
<th>Total duration of illness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>03.03.18</td>
<td>06.03.18</td>
<td>03 days</td>
</tr>
<tr>
<td>2</td>
<td>14.03.18</td>
<td>16.03.18</td>
<td>02 days</td>
</tr>
<tr>
<td>3</td>
<td>17.04.18</td>
<td>24.04.18</td>
<td>07 days</td>
</tr>
<tr>
<td>4</td>
<td>24.04.18</td>
<td>26.04.18</td>
<td>02 days</td>
</tr>
<tr>
<td>5</td>
<td>03.05.18</td>
<td>10.05.18</td>
<td>07 days</td>
</tr>
<tr>
<td>6</td>
<td>09.05.18</td>
<td>12.05.18</td>
<td>03 days</td>
</tr>
<tr>
<td>7</td>
<td>13.05.18</td>
<td>16.05.18</td>
<td>03 days</td>
</tr>
<tr>
<td>8</td>
<td>25.04.18</td>
<td>27.04.18</td>
<td>02 days</td>
</tr>
<tr>
<td>9</td>
<td>18.05.18</td>
<td>20.05.18</td>
<td>02 days</td>
</tr>
<tr>
<td>10</td>
<td>03.06.18</td>
<td>04-06-2018</td>
<td>01 days</td>
</tr>
<tr>
<td>11</td>
<td>01-06-2018</td>
<td>05-06-2018</td>
<td>07 days</td>
</tr>
</tbody>
</table>

Table 5: Common symptoms recorded in death cases

<table>
<thead>
<tr>
<th>Common symptom</th>
<th>Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>06</td>
<td>54.54</td>
</tr>
<tr>
<td>Vomiting</td>
<td>11</td>
<td>100</td>
</tr>
<tr>
<td>Jaundice</td>
<td>11</td>
<td>100</td>
</tr>
<tr>
<td>Headache</td>
<td>02</td>
<td>18.18</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>11</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 6: Lab finding of the deceased cases (as available in the medical records)

<table>
<thead>
<tr>
<th>Name of test</th>
<th>Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBsAg</td>
<td>11</td>
<td>100</td>
</tr>
<tr>
<td>SGPT (raised)</td>
<td>10</td>
<td>90.90</td>
</tr>
<tr>
<td>SGOT (raised)</td>
<td>09</td>
<td>81.81</td>
</tr>
<tr>
<td>Malaria Positive</td>
<td>01</td>
<td>9.09</td>
</tr>
<tr>
<td>Widal Positive</td>
<td>02</td>
<td>18.18</td>
</tr>
<tr>
<td>Serum Bilirubin (Raised)</td>
<td>10</td>
<td>90.90</td>
</tr>
</tbody>
</table>

Table 7: Serological test results for samples collected by ICMR NIRTH Jabalpur

| Total samples collected | 53 |
| Positive samples for one or other etiology | 13 |
| Hepatitis A virus | 0 |
| Hepatitis E virus | 2 |
| HBsAg | 1 |
| Hepatitis C virus | 0 |
| Chikungunya virus IgM | 2 |
| Leptospira IgM | 5 |

The first case of death held on 06/03/2018 of Rahul Sahu aged 20 years of Rajakhedi, Makronia, Sagar. Last case of death till now was on 05/06/2018 of Suman Ahirwar aged 38 years of Village Jinda, Makronia, Sagar. The symptomatic live case was found in the family of a deceased (mother of the deceased) and was on treatment in Medical College Sagar, in stable condition. (Table 1)

All the cases of deaths held in a perimeter of 10 kms in the Makronia municipality area of Sagar. The cases were mostly dispersed in geographical area except for clustering of 3 cases in Shankargarh and 04 cases in Durganagar Rajakhedi (Table 2) Approx 55% of death cases were from Shankargarh and Durganagar locality. Among the identified death cases 63% were males and 55% were in the adult age group of 20-40 years. The youngest was 9 year male and the oldest was 56 year female (Table 3).

Among the cases the 3 persons (aged <20 years) were school going students. The 03 females were housewives and 01 female was working in ICDS as Aganwadi sahayika. Rest of the five cases (05) was working in hardware shops/steel welding shops. None of them was a hospital employee, or working in the jobs with higher risk of getting hepatitis B infection. None of the cases were injecting drug users as per history. There was also no history of getting injected with reused syringes. 10 out of 11 cases seek medical care from registered medical practitioner (MBBS/BAMS) and only 01 case (village-Jinda) has history of medical care from quacks. No history of Blood transfusion and surgeries in the last 6 months. All of the deaths have occurred within 7 days of illness in which 72.72% in within 3 days of illness whereas 27.27% were from 3-7 days of illness (Mean duration of illness was 3.54 days, std dev. 2.2 days), (Table 4) All the cases have few common symptoms like jaundice and abdominal pain and vomitting (Table 5). All the deceased cases had been treated at tertiary care hospitals; they have undergone various pathological tests. The test reports revealed Hepatitis b surface antigen (HBsAg ) test +ve in 100% of cases ,SGPT raised in 90.90 % cases, SGOT raised in 81.82 cases. 9.09% cases were malaria positive, 18.18% cases were WIDAL positive and in 90.90% cases serum bilirubin was raised. (Table 6)

The camps organised with the help of health department areas where deceased cases were reported from mid May to mid June 2018. A total of 2395 individuals were examined. Of this 141 persons were screened for HBsAg and only one was found positive. 163 individuals were examined for malaria and none was found malaria positive.

Due to unavailability of lab infrastructure for isolation of HAV/HEV and serological investigations,
ICMR NIRTH Jabalpur was requested to carry out investigation for confirmatory findings.

Further investigation was done by a joint team with members from ICMR NIRTH Jabalpur, IDSP and members from Community Medicine department of BMC Sagar. This joint team collected 53 samples of blood from close family contacts of the deceased (death cases) and individuals suffering from fever and jaundice like illnesses. The results of the sample testing revealed 13 positive samples for different serological tests. Among all the serological test positivity the highest (05 cases positive and 03 equivocal) were for Leptospira IgM. (Table 7)

DISCUSSION
The HBsAg positivity was one of the major findings of outbreak investigation. Though the team suspected hepatitis A/ hepatitis E infection initially as in India, most of the outbreaks of viral hepatitis are due to faeco-orally transmitted hepatitis. But hepatitis B surface antigen positive results in all the cases (death cases) was a crucial unexpected finding.15-17 A similar unusual clustering of cases of viral hepatitis B was recently observed in rural areas of Mehasana district, Gujarat State, India. As in the present study there was no history of hospital admission, blood transfusion, intravenous injections, tattooing, or dental treatment in last 6 months. But there was significant history of unsafe injections by local practitioners which in not found in this study.18 Another outbreak of Hepatitis B was also reported from Gujrat’s Modasa town of Sabarkantha district in 1995.19 The cause of Hepatitis B positivity remain unidentified in this study due to lack of sexual history / personal habits (75% cases were adults), also the ICMR Nirth Lab findings found only 01 positive case among 53 samples from contacts, family members and suspects. Also the HBsAg is only a screening test for Hepatitis B and may have HBV-DNA negativity rates more than 50%.20 The case fatality rate of 91.67 was very high compared to 46.7% in Mehsana outbreak.17 So Co-infection with hepatitis B and D viruses (IgM-HBc positive) as well as super infections (IgMHBc negative) have been reported to cause both Viral hepatitis B outbreak in India fulminant hepatitis and high mortality rates, but ICMT NIRTH findings were negative for Hepatitis C and D viruses.21-22 The leptospira IgM positivity in about 40% samples suggested the possible cause of high mortality rate, but this was a diagnostic challenge in limited laboratory support as in this study.23

CONCLUSION
The above observation and result support that all the deaths were due to acute hepatic injury leading to hepatic encephalopathy and its sequels. It is also evident that all the cases were HBsAg positive hence hepatitis B role in hepatic injury is almost certain. But such a high fatality in acute period of a week or less is not documented in hepatitis B infection. So there might be co infection with other infectious agents (most probable hepatitis A, D or E) which resulted in acute hepatic failure and death. We were not able to confirm the exact cause of deaths in these HBsAg positive cases, so the report with suitable recommendations was submitted to health department along with need for further investigation.

To come out with definite result a joint team with members from ICMR NIRTH, IDSP and members from Community Medicine department carried out investigation again and came with findings (Table 7) and Leptospira co-infection/super-infection found to be responsible for such a high fatality in cases with acute Hepatitis.

Recommendations:
As per the results of primary investigation by community medicine department of BMC Sagar, healths camps were organised for screening HBsAg positive cases in the community and surveillance for finding cases with acute jaundice. Hepatitis B vaccination was also started in these camps and 1505 individuals were vaccinated with hepatitis B vaccine. All the preventive steps like IEC on safe injection practices and safe drinking water were recommended to health department.

The major recommendation is for investigators/epidemiologists. Epidemiologists investigating the hepatitis B outbreaks with sudden and increased mortality in short duration of illnesses should investigate all the aetiologies like hepatitis A, C and E and never miss the leptospira investigation. Though Leptospirosis co-infection & superinfection with hepatitis B is not documented much in the text, but a high index of suspicion should be maintained in patient presenting with acute hepatitis, especially in individuals with HBsAg positive. Early diagnosis and application of preventive measures to control leptospiroa is imperative to stop the casualties by this potentially dangerous disease.

REFERENCES


Evaluation of Maternal Health Related Government Schemes being provided to the High-Risk Mothers of Bhavnagar District, Gujarat

Pooja A Chauhan¹, K D Bhalani²

ABSTRACT

Background: About 20-30% of all the pregnancies belong to the high-risk category. This study conducted to evaluate maternal health related government schemes being provided to the high-risk mothers of Bhavnagar district, Gujarat.

Methods: It was a cross-sectional study conducted among the high-risk mothers of Bhavnagar district during the period from March 2017 to August 2018. 10 PHCs were selected using PHC score card. From each selected PHCs, 3 sub centres were selected randomly. From each selected sub centre, 3 high-risk mothers were randomly selected and interviewed.

Results: Among the eligible high-risk mothers, 53.3% mothers of the worst performing and 72% mothers of the best performing PHCs received cash assistance under JSY. All the eligible mothers from the worst performing PHCs received benefits under KPSY, while in the best performing PHCs, 87.5% of the eligible mothers received benefit for early registration and 83.3% of the eligible mothers received benefit for institutional delivery under KPSY. Some of the mothers didn’t receive the cash assistance under JSY because of issues related to their bank account and few others didn’t receive the benefit even after fulfilment of all the requirements of the scheme and they were not aware about the reason.

Keywords: health services, high-risk, pregnancy, program evaluation, risk factors

INTRODUCTION

As per World Health Organization (WHO), about 830 women die from pregnancy or childbirth-related complications around the world every day.¹ An estimated global total of 10.7 million women have died in the 25 years between 1990 and 2015 due to maternal causes.² Deaths among pregnant women, children and adolescents account for more than one-third of the global burden of premature mortality, despite the fact that the vast majority of these deaths are preventable.³ Of all pregnancies, about 20-30% of pregnancies belong to high-risk category. Even with adequate antenatal and intranatal care, this small group is responsible for 70–80% of perinatal mortality and morbidity.⁴ Reducing maternal and child mortality are among the most important goals of the National Rural Health Mission. Huge and strategic investments are being made by Government of India to achieve these goals. The National Health Mission (NHM) includes Health System Strengthening in rural and urban areas and Reproductive-Maternal-Neonatal-Child and Adolescent Health (RMNCH+A).

The central as well as state governments have implemented various schemes for maternal health. Few of the central government schemes for maternal health are Pradhan Mantri Surakshit Matrutva Abhiyan (PMSMA) and Pradhan Mantri Matru Vandana Yojana (PMMVY) both were launched in 2016, Janani Shishu Suraksha Karyakaram (JSSK) launched in 2011, Janani Suraksha Yojana (JSY)
launched in 2005. In Gujarat, the state government has implemented schemes like, Kasturba Poshan Sahay Yojana (KPSY) launched in 2012 and Chiranjeevi Yojana (CY) launched in 2005 in addition to the central government schemes.

Schemes like JSSK and Chiranjeevi Yojana promotes institutional delivery, while cash assistance is given under JSY, KPSY and PMMVY. Early detection of high-risk pregnancy is identified through PMSMA.5-10

Since 2005, many schemes have been implemented but there were no such study that evaluated such type of maternal schemes particularly among high-risk mothers. This study was conducted with the objectives to evaluate maternal health related government schemes being provided to high-risk mothers of the worst and best performing PHCs of Bhavnagar district of Gujarat. The study also assessed the factors responsible for non-compliance to/non-receipt of maternal health related schemes among the high-risk mothers.

**METHODOLOGY**

It was a cross-sectional study conducted in 5 worst performing and 5 best performing PHCs of Bhavnagar district during the period starting from March 2017 to August 2018. Study population consisted of high-risk mothers, who were registered in the PHCs of Bhavnagar district. The study sample consisted of 90 high risk mothers (45 high-risk mothers each from the worst performing PHCs and the best performing PHCs). The high-risk mothers, who were not willing to participate in the study were excluded from the study.

Permission was obtained from Chief District Health Officer (CDHO) of Bhavnagar district to conduct this study. Multi-stage sampling technique was followed in this study. In the first stage, 5 best performing PHCs and 5 worst performing PHCs (out of total 45 PHCs of the district) were selected by using total composite index calculated from PHC score card. Total composite index includes different indices like pregnancy care group index, child birth group index, reproductive age group index, post natal mother and newborn care group index.

<table>
<thead>
<tr>
<th>List of PHCs included in this study using total composite index:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Best performing PHCs</strong></td>
</tr>
<tr>
<td>Songadh</td>
</tr>
<tr>
<td>Mangadh</td>
</tr>
<tr>
<td>Tansa</td>
</tr>
<tr>
<td>Bhumbhali</td>
</tr>
<tr>
<td>Valukal</td>
</tr>
</tbody>
</table>

The lowest total composite index among the selected best performing PHCs was 0.82 and the highest total composite index among the selected worst performing PHCs was 0.24.

In the second stage, from each selected PHC, 3 sub-centers were selected by simple random sampling using lottery method. In the final stage, from each selected sub-centre, 3 high-risk mothers were selected by simple random sampling using lottery method. If 3 high-risk mothers were not available in the selected sub-centre, another sub-centre of the same PHC was selected similarly by using lottery method. A semi-structured questionnaire was designed, which was corrected by conducting a pilot study among 10 high risk mothers from the nearby PHC.

After the selection of high-risk mothers, they were called to fix their convenient time for their interview. All interviews were conducted in a local language and at a place and time convenient to the participant. The visit was conducted post-delivery, between 42 days to 75 days after the delivery and information regarding receipt of benefit of various maternal health related schemes was collected.

Informed written consent was obtained from pregnant women after explaining the nature and purpose of the study in the local language. The process of data collection did not involve any invasive process and does not pose any potential risk or harm to the participants. Privacy was ensured while taking the interview.

We obtained ethical approval from the IRB, Government Medical College, Bhavnagar for conducting this study. All information collected during the study was kept confidential.

A face validation of the questionnaire was done. The study procedures from recruitment till data entry were piloted for feasibility and for making any changes in the procedures. The 2nd version of the questionnaire was used for the study. Data entry was done in Epi Info software 7.0 with appropriate data checks in order to avoid errors in data entry.

The study was conducted among high risk mothers, registered in the PHCs of Bhavnagar district. The study findings can be generalized to the high-risk mothers registered in the PHCs of the Bhavnagar district of Gujarat.

**RESULTS**

This study evaluated maternal health related government schemes being provided to the high-risk mothers of Bhavnagar district, Gujarat. The data were collected during the period from May 2017 to April 2018.
Table 1: Socio-Demographic Profile of the Selected High-risk Mothers of Bhavnagar District

<table>
<thead>
<tr>
<th>Socio-demographic factors</th>
<th>High-risk mothers (%)</th>
<th>Worst performing PHCs (n=45)</th>
<th>Best performing PHCs (n=45)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25 years</td>
<td>8 (17.8)</td>
<td>12 (26.7)</td>
<td></td>
</tr>
<tr>
<td>25-35 years</td>
<td>36 (80.0)</td>
<td>31 (68.9)</td>
<td></td>
</tr>
<tr>
<td>&gt;35 years</td>
<td>1 (2.2)</td>
<td>2 (4.4)</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hindu</td>
<td>43 (95.6)</td>
<td>45 (100)</td>
<td></td>
</tr>
<tr>
<td>Muslim</td>
<td>2 (4.4)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Caste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td>2 (4.4)</td>
<td>5 (11.1)</td>
<td></td>
</tr>
<tr>
<td>OBC</td>
<td>38 (84.5)</td>
<td>33 (73.3)</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>5 (11.1)</td>
<td>7 (15.6)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥High school</td>
<td>3 (6.7)</td>
<td>3 (6.7)</td>
<td></td>
</tr>
<tr>
<td>Middle school</td>
<td>4 (8.9)</td>
<td>8 (17.8)</td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>21 (46.7)</td>
<td>21 (46.7)</td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>17 (37.7)</td>
<td>13 (28.8)</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>32 (71.1)</td>
<td>40 (88.9)</td>
<td></td>
</tr>
<tr>
<td>Labour</td>
<td>4 (8.9)</td>
<td>1 (2.2)</td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>9 (20.0)</td>
<td>4 (8.9)</td>
<td></td>
</tr>
<tr>
<td>Modified Prasad socio-economic class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UM class II</td>
<td>6 (13.3)</td>
<td>2 (4.4)</td>
<td></td>
</tr>
<tr>
<td>M class III</td>
<td>12 (26.7)</td>
<td>8 (17.8)</td>
<td></td>
</tr>
<tr>
<td>LM class IV</td>
<td>21 (46.7)</td>
<td>24 (53.3)</td>
<td></td>
</tr>
<tr>
<td>L class V</td>
<td>6 (13.3)</td>
<td>11 (24.5)</td>
<td></td>
</tr>
</tbody>
</table>

(UM=Upper middle; M=Middle; LM=Lower middle; L=Lower)

There were 90 high-risk mothers selected from 10 PHCs (5 worst performing PHCs + 5 best performing PHCs) of Bhavnagar district.

As observed from the table 1, in the worst performing PHCs, 80% of high-risk mothers were between the age group of 25-35 years, while in the best performing PHCs, 68.9% of the high-risk mothers were between the age group of 25-35 years.

Table 1 presents the socio-demographic profile of the selected high-risk mothers. Information regarding mother’s age, religion, cast, education, occupation, per capita income was obtained from the mothers.

Table 2 presents the details of high-risk mothers, who had received various benefits under different programs. The information was obtained from the mothers.

Table 3 presents the reasons for non-receipt of benefit. The information was obtained from the mothers, who didn’t receive the benefit under various schemes.

Almost all the selected mothers were Hindus in both types of PHCs. In the worst performing PHCs, 37.7% of the high-risk mothers were illiterate, while in the best performing PHCs, 28.8% of the high-risk mothers were illiterate.

Table 2: Avail Benefits of Various Schemes under RMNCH+A by Eligible High-risk Mothers

<table>
<thead>
<tr>
<th>Programmes</th>
<th>Number of high-risk mothers (%)</th>
<th>Eligible (n)</th>
<th>Benefited (%)</th>
<th>Eligible (n)</th>
<th>Benefited (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Worst performing PHCs</td>
<td>Best performing PHCs</td>
<td>Worst performing PHCs</td>
<td>Best performing PHCs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chiranjeevi Yojana</td>
<td>6</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>JSY</td>
<td>15</td>
<td>8 (53.3)</td>
<td>25</td>
<td>18 (72.0)</td>
<td></td>
</tr>
<tr>
<td>JSSK- Diagnosis</td>
<td>45</td>
<td>44 (97.8)</td>
<td>45</td>
<td>45 (100)</td>
<td></td>
</tr>
<tr>
<td>JSSK- Drug</td>
<td>45</td>
<td>44 (97.8)</td>
<td>45</td>
<td>45 (100)</td>
<td></td>
</tr>
<tr>
<td>JSSK- Diet</td>
<td>45</td>
<td>13 (28.9)</td>
<td>24</td>
<td>23 (95.8)</td>
<td></td>
</tr>
<tr>
<td>JSSK- Transport</td>
<td>13</td>
<td>10 (76.9)</td>
<td>24</td>
<td>23 (95.8)</td>
<td></td>
</tr>
<tr>
<td>KPSY- Early registration</td>
<td>2</td>
<td>2 (100)</td>
<td>8</td>
<td>7 (87.5)</td>
<td></td>
</tr>
<tr>
<td>KPSY- Govt. Institutional Delivery</td>
<td>1</td>
<td>1 (100)</td>
<td>6</td>
<td>5 (83.3)</td>
<td></td>
</tr>
<tr>
<td>PMSMA</td>
<td>45</td>
<td>9 (20.0)</td>
<td>45</td>
<td>18 (40.0)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Frequency of Reasons for Non-receipt of Benefits of Various Schemes under RMNCH+A by Eligible High-risk Mothers

<table>
<thead>
<tr>
<th>Programmes</th>
<th>Reasons for non-receipt</th>
<th>Number of the high-risk mothers (%)</th>
<th>Worst performing PHCs</th>
<th>Best performing PHCs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worst performing PHCs *</td>
<td>Best performing PHCs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6/6 (100)</td>
<td>11/11 (100)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3/7 (42.9)</td>
<td>2/7 (28.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4/7 (57.1)</td>
<td>5/7 (71.4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3/31 (9.7)</td>
<td>0/21</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28/31 (90.3)</td>
<td>21/21 (100)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3/3 (100)</td>
<td>1/1 (100)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0/0</td>
<td>1/1 (100)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0/0</td>
<td>1/1 (100)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>36/36 (100)</td>
<td>27/27 (100)</td>
</tr>
</tbody>
</table>

(*One high-risk mother was excluded from analysis as she consulted private clinic and didn’t want to avail any benefit of Govt. Health facility)
According to the Modified Prasad classification, among the high-risk mothers, in the worst performing PHCs, 46.7% of the mothers were from the lower middle class and 26.7% of the mothers were from the middle class, while in the best performing PHCs, 53.3% of the mothers were from the lower middle class and 24.5% mothers were from the lower class.

As observed from the table 2, none of the eligible high-risk mothers from the study participants was benefited under Chiranjeevi Yojana because no private practitioner was registered under this scheme in the Bhavnagar district.

In the worst performing PHCs, 53.3% of the eligible mothers, while in the best performing PHCs, 72.0% of the eligible mothers received cash assistance under JSY.

All the high-risk mothers of the both the groups of PHCs benefited under JSSK for free diagnosis and free drugs. In the worst performing PHCs, only 28.9% of the high risk mothers were delivered in the government institution and all of them received dietary benefit under JSSK. Among them, 76.9% of the mothers received benefit of free transport under the scheme. In the best performing PHCs, 53.3% of the mothers were delivered in the government institution and all of them received the dietary benefit under the scheme. Among them, 95.8% of the mothers, received the benefit of free transport.

In the worst performing PHCs, cash assistance for early registration and also for government institutional delivery was received by all the eligible mothers under KPSY. In the best performing PHCs, 87.5% of the eligible mothers received cash assistance for early registration and 83.3% of the eligible mothers received cash assistance for government institutional delivery under KPSY.

In the worst performing PHCs, 20% of the eligible mothers, while in the best performing PHCs, 40% of the eligible mothers received the benefit under PMSMA.

As observed from table 3, none of the eligible mothers received the benefit under Chiranjeevi Yojana.

Among the high risk mothers, who didn’t receive the benefit under JSY, 42.9% and 28.6% of the mothers from the worst and best performing PHCs respectively did not receive it because of the issues related with their bank accounts. Remaining mothers, who didn’t receive the benefit from both the groups of PHCs, were not aware about why they didn’t receive the benefit yet.

In the worst performing PHCs, the mothers, who did not receive dietary benefit of JSSK, either delivered in private hospital or at home. So they were not eligible to receive the benefit under JSSK. Similarly, the mothers from best performing PHCs, who didn’t receive the benefit, delivered in the private hospitals and thus not eligible for the benefit. ‘Vehicle (Khilkhilat) not available at the service centre’ was the only reason given by the mothers for non-receipt of the benefit of the free transportation in both the groups of PHCs.

Among the mothers, who did not receive benefit under PMSMA, in many of the PHCs because they were not offered the scheme in Bhavnagar district, which might be the reason for non-receipt of the benefit to the mothers under PMSMA.

**DISCUSSION**

There was no study found, which evaluated maternal health related schemes among the high-risk mothers. So the results of this study were compared with the similar studies conducted among normal mothers in different areas of the country.

Under JSY Rs.500/- is being paid to the mothers of BPL, SC & ST category before 8 to 12 weeks of the delivery. Additional benefit (of Rs.200/- for rural area and Rs.100/- for an urban area) is also being paid to the beneficiaries before discharge from the health facility.7

In the present study, 53.3% and 70.0% of the eligible high-risk mothers from the worst and the best performing PHCs got benefit under JSY respectively. H. Kaur et al (2015) in their study in Punjab found that 48.2% of the eligible mothers were benefited under JSY.11 V. Kumar et al (2015) in their study in Uttar Pradesh found that all the eligible mothers were benefited under JSY.12 M. Rathwa et al (2014) in their cross-sectional study in the Bhavnagar district found that 60.8% of the eligible mothers had received cash assistance under JSY.13

Under the JSSK, benefit of absolutely free or no expense delivery in the government hospital (which includes caesarean section, drugs, diagnostics, diet, blood transfusion and transport) is being provided to the mothers.6

In this study, in the worst performing PHCs, 28.9% of the high-risk mothers were delivered in the government institution and among them 76.9% of the mothers received free transport under JSSK. In the best performing PHCs, 53.3% of the high-risk mothers delivered in the government institution and out of them, 95.8% of the mothers received free transport under this scheme.V. Chellaiyan et al (2018) in their study in Tamil Nadu found that free diagnosis, free drug and free delivery were received under JSSK by all the eligible mothers, while transport facility was received only by 1.2% of the mothers.14 U. Tyagi et al (2016) in their study in Sirmaur
district of Himachal Pradesh found that 19% of the eligible mothers had received free transport benefit under JSSK.15

Under the KPSY, cash support of Rs.6000/- is being given in three installments to all the BPL mothers. Installment of Rs.2000/- is paid at each stage i.e. early registration, institutional delivery and after full immunization of her infant.8

In this study all eligible high-risk mothers from the worst performing PHCs were received cash assistance of early registration and institutional delivery under KPSY, while in the best performing PHCs, 87.5% of the eligible high-risk mothers were received cash assistance for early registration and 83.3% of the eligible mothers were received cash assistance for institutional delivery under this scheme. V. Ramanuj (2016) in their cross-sectional study in Ahmadabad among the BPL mothers found that 77.6% mothers were benefited under KPSY.16 M. Rathwa et al (2014) in their cross-sectional study in the Bhavnagar district found that 27.8% of the eligible mothers had received benefits under KPSY.13

During the informal talk with the health personnel it was found that in the rural area of Bhavnagar district, no private practitioner was registered for the Chiranjeevi Yojana and in some of the PHCs, no private practitioner was registered for the PMSMA, which might be the reason for non-receipt of the benefit of both the schemes by the eligible high-risk mothers.

In the present study, the high-risk mothers who did not receive the benefit of JSY because of some of the mothers did not have their own bank account and some of the mothers were not aware about the reason why they did not receive the benefit even after the fulfilment of all the necessary requirement of the scheme. D. Sahu et al (2012) in their cross-sectional study in Chhattisgarh found that the most common cause for the non-receipt of the benefit of JSY was the lack of awareness about the scheme (43.9%) among the mothers.17

**Limitation:** This being a cross-sectional study, causal associations between the receipt of the service and factors responsible for non-receipt could not be established.

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Changes in Body Mass Index (BMI) During First Year among Undergraduate Students of a Medical College in New Delhi

Preety Doley1, Aravind Gandhi P1, Thirunavukkarasu Balasubramanian2, Geeta Pardeshi3

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Conflict of Interest: None declared
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ABSTRACT

Background: The transition from secondary school to university is a critical period in student’s life which can influence their nutritional status impacting health in later life. The study conducted to assess changes in BMI after 8 months of admission among first year undergraduate students of a Medical College.

Methodology: A descriptive longitudinal study was conducted among 150 MBBS students of a Government Medical College, New Delhi, during April-May 2018 in which their weight and height were measured at the time of admission and at 8 months of follow up.

Results: There was significant decrease in mean BMI from the baseline (24.02 kg/m2) to follow-up (23.02 kg/m2) [t=-5.76, <0.001]. Compared to students with normal BMI at baseline, significant reduction in BMI was noted among overweight [Mean change:-1.33 kg/m2; p=0.007] and obese students [Mean change:–2.21kg/m2; p<0.001]. The number of students who were overweight/obese had decreased from 71(47%) at baseline to 56 (37%) at follow up.

Conclusion: There was a high prevalence of overweight/obesity among the newly admitted medical students with a decrease in BMI at follow up, especially among the overweight/obese individuals. Yet more than one third of the students were overweight/obese at eight months follow up.

Keywords: Body mass index, nutrition status, university students, obesity, Freshman 15.

INTRODUCTION

Moving from secondary school to university is a period of transition for students. This transition phase is often associated with high academic pressure, stress, more freedom, living away from home without parental supervision, new friends, substance use, unhealthy eating and change in physical activity.1,2,3 Students also change their eating patterns like irregular eating pattern, numbers of meals per day, number of snacks per day, eating in restaurant, eating with group, take-away food, fast food, fresh food, prepared food4 as well as a reduced intake of fruits, vegetables, and whole wheat cereal products.4 Moreover, during the first year of college, the students go through stress and new challenges which put them at increased risk for substance abuse including tobacco5,6 and alcohol use.8 Among other effects, these changes can have an impact on their nutritional status9 which itself is an important risk factor for both infectious and chronic diseases and can particularly trigger non-communicable disease(NCD) in later life.10,11 Every year more than 60000 students take admission for the MBBS curriculum in various government and private medical colleges in India. Students entering medical colleges are also in a phase of transition and experience changes in lifestyle. It is important to monitor these changes so that appropriate interventions are planned to ensure that students who will be bearing the responsibility of
community’s health in future themselves maintain a healthy lifestyle and remain healthy.

In this study we have assessed the changes in nutritional status of medical students who have completed first semester of their MBBS curriculum.

**METHODOLOGY**

A descriptive longitudinal study was conducted at Vardhman Mahavir Medical College attached to the Safdarjung Hospital, New Delhi among 150 undergraduate medical students of 2017 batch. A baseline health checkup of the students admitted in August 2017 was conducted, within first week of their admission which included measurement of weight and height. Weight was measured using weighing scale [SAMSO SELECT Brand] and height was measured using stadiometer [SECA Brand Model no. 213]. The age and gender of each student was noted down.

Eight months after the baseline checkup the anthropometric measurements were repeated using the same weighing scale and stadiometer to assess the change in weight and BMI. The measurements were done by trained health workers.

Body Mass Index (BMI) was calculated for each student. The students were categorized according to the BMI criteria\(^\text{12}\) i.e. BMI <18.5 kg/m\(^2\) Underweight; BMI 18.5-22.9 kg/m\(^2\) Normal; 23-24.9 kg/m\(^2\) Overweight; and ≥25 kg/m\(^2\) Obesity.

Mean and standard deviation of weight and BMI at baseline and follow up were calculated and changes in these parameters were compared using paired t test. The change in BMI in different baseline categories of nutrition status was compared using ANOVA with post hoc analysis using Tukey test. A p<0.05 was considered to be statistically significant.

Formal approval for the study was obtained from the Institutional Ethical Committee of Vardhaman Mahavir Medical College & Safdarjung Hospital by institutional ethics committee. A written informed consent was taken from each student.

**RESULTS**

Of the total 150 students, 94 (63%) were males and the average age of all students was 18 years (sd= 1.3 years). The mean weight of all students at baseline was 67.14 kg and showed a significant reduction to 65.26 kg at eight months follow up (t=3.86, p=0.00). (Table 1) The mean BMI at baseline was 24.02 kg/m\(^2\) and showed a significant decrease to 23.02 kg/m\(^2\) at follow up (t=5.76, p<0.001) (Table 1). The mean change in weight and BMI were - 1.88 kg and - 0.992 kg/m\(^2\) respectively.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Baseline Mean (sd)</th>
<th>Follow up Mean (sd)</th>
<th>Change Mean (sd)</th>
<th>p value#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>67.14 (16.59)</td>
<td>65.26 (14.30)</td>
<td>-1.88 (5.97)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>BMI</td>
<td>24.02 (5.11)</td>
<td>23.02 (4.33)</td>
<td>-0.99 (2.11)</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

* Change at follow up compared to baseline; 
# t test applied

<table>
<thead>
<tr>
<th>Follow up Categories</th>
<th>Baseline Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Underweight</td>
</tr>
<tr>
<td>Underweight</td>
<td>10 (7)</td>
</tr>
<tr>
<td>Normal</td>
<td>7 (5)</td>
</tr>
<tr>
<td>Overweight</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Obese</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

Table 2 describes the change in nutritional status at individual level. Out of the 150 students, 122 (81%) remained in the same category of nutritional status - 56 (37%) had normal BMI, 56 (37%) were overweight/obese and 10 (7%) were underweight at both baseline and follow up. A total of 4 (3%) moved from normal to overweight, 2 (1%) shifted from normal to underweight category. A total of 7 (5%) students moved from underweight to normal category and 15 (10%) from overweight/obese to normal category.

Table 3 describes the mean change in BMI among students in different baseline categories on nutritional status. There was a significant difference among the mean change in BMI among different baseline categories of nutritional status (p<0.001). Major reduction in BMI was noted among overweight and obese students. Tukey post hoc tests indicated that the change in BMI among overweight

<table>
<thead>
<tr>
<th>Baseline Categories</th>
<th>N</th>
<th>Mean change *</th>
<th>Std deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>17</td>
<td>0.74</td>
<td>1.43</td>
</tr>
<tr>
<td>Normal</td>
<td>62</td>
<td>-0.33</td>
<td>1.24</td>
</tr>
<tr>
<td>Overweight</td>
<td>18</td>
<td>-1.33</td>
<td>1.06</td>
</tr>
<tr>
<td>Obesity</td>
<td>53</td>
<td>-2.21</td>
<td>2.62</td>
</tr>
</tbody>
</table>

* during follow up compared to baseline; 
 F value 15.26, P value <0.001

Overall the number of students with normal BMI had increased from 62 (41%) at baseline to 78 (52%) during follow up. The number of underweight students were 17 (11%) and 12 (8%) at baseline and follow up respectively while the number of students who were overweight/obese had decreased from 71 (47%) to 56 (37%).

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Table 3 describes the mean change in BMI among students in different baseline categories on nutritional status. There was a significant difference among the mean change in BMI among different baseline categories of nutritional status (p<0.001). Major reduction in BMI was noted among overweight and obese students. Tukey post hoc tests indicated that the change in BMI among overweight
students was significantly different from those who were overweight (p=0.007) and obese (p<0.001).

DISCUSSION

Overall there was a significant decrease in weight and BMI at eight months of follow up following admission to the medical college. The reduction in BMI was significantly more in overweight/obese students.

Our findings are in contrast to other studies which have reported that students tend to gain weight during their first year of university. The phenomenon has been called the ‘Freshman 15’, in reference to the perception that students gain 15lbs (6.8kg) during their first year in university. But studies have reported a weight gain of 1kg to 4kg, during this period. 4,13,14,15 Studies done in United States and Europe have shown that students attending their first year of university or college gain significantly more weight than age matched individuals who did not attend university or college. 1,4

Obesity is a known risk factor for many chronic diseases. 10 In the present study the prevalence of overweight/obesity among medical students at the time of admission was 47% and at the time of follow-up after 8 months was 37%. Prevalence of overweight and obesity among university students in India has been reported to range from 11% to 37.5%. 16-19 In our study a major shift observed was from overweight/obese category to normal BMI. We have not studied the reasons for these shifts but put forth a few possible reasons. The students gain entry into a medical college after giving the National Eligibility cum Entrance Test (NEET) exam which is a competitive exam requiring intensive preparation with long hours of study leading to sedentary lifestyle. Stress and improper diet can be other contributing risk factors for overweight/obesity. Admission to medical college marks a transition where students may get time to modify their routine. The medical curriculum itself may motivate them to take up healthy lifestyle.

Even though the study was conducted at a single institute located in Delhi but the findings give a hint about the need to understand the problem of overweight/obesity in this group of students and design effective interventions to address the issue.

CONCLUSION

There was a high prevalence of overweight and obesity among the newly admitted medical students with a decrease in weight and BMI during the follow up period, especially among the overweight and obese individuals. Yet more than one third of the students were found to be overweight/obese at eight months follow up. Hence, the study reinforces the need about maintaining healthy lifestyle, healthy balanced diet and a physically active daily routine targeting the students at the beginning of their college career to prevent the risks of developing chronic degenerative diseases.

RECOMMENDATIONS

Interventions should be designed and implemented for primordial prevention of obesity in schools. There is both a need and an opportunity to address the issue of overweight/obesity among medical students. The college administration can include topics of healthy lifestyle as a part of the induction program. Facilities for healthy diet and exercise should be made available in the college premises. Moreover, there is also need of future experimental research to evaluate the impact of such intervention programs.

ACKNOWLEDGEMENTS

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INTRODUCTION

Almost, seventy thousand females worldwide die each year because of unsafe abortion.¹ The major brunt of these unsafe abortions contributing to about 13% pregnancy related deaths worldwide, is borne by developing countries only. ²

More than 75% of pregnancies in India are unplanned and a quarter of them are undesired.³ Annually almost 11 million abortions take place in the country, and more than half of them are unsafe, accounting for high maternal morbidity and mortality rates ⁴. Many of these abortions can be averted by simply creating awareness among females on sexual and reproductive health including various contraceptive measures.⁵

In spite of availability of many contraceptive techniques in India, the couple protection rate estimated at 41% is considered inadequate.⁶ Most couples in India do not want to use a contraceptive method on a long-term basis for the fear of related side-effects. Hence, unwanted and unplanned pregnancies are quite common.⁷

Unprotected sex, failure of barrier methods and sexual violence also often lead to an unwanted pregnancy. In such situations emergency contraceptive pills give women a chance at least to prevent an unwanted pregnancy. Only few know about ECP as a method to prevent unintended pregnancy after unprotected intercourse
and even among those who are aware of ECP, very few know how to use it correctly. 8

To make ECP effective in preventing unwanted pregnancies, it is critical that potential users are made aware of correct use of ECP and the sources from which it could be obtained.

With this background the present study was carried out to assess the level of knowledge towards emergency contraception among married women of reproductive age group in Field practice areas of Rural Health Training Centre of the Department of Community Medicine, Rohilkhand Medical College and Hospital, District Bareilly.

MATERIALS AND METHOD

A cross sectional three month study was carried out in villages of BithriChanpur and Nawabganj Blocks which are field practice areas of Rural Health Training Centre of the Department of Community Medicine, Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh. All married women of reproductive age group aged between 15-45 years in the selected households were surveyed and comprised the study group. Number of household to be taken for the survey was decided according to Probability Proportionateto Size (PPS) technique.

Villages in the study area were divided into 3 categories according to distance: < 1 km, 1-3 km, and >3 km from the RHTC to give a better representation. From each category two villages were selected randomly one on road side towards right and one from interior area. Thus six villages out of 60 were selected. A medical social worker first visited the selected villages and identified those households in which currently married females were residing by house to house survey. Serial numbers were allotted by sequence to the identified households. Informed consent verbally was obtained by the married women of reproductive age group (15-45 years) who were the study unit in the study The information was collected by the investigators themselves by interview technique. The investigators were postgraduate students in community medicine, who had been and were pre-trained to do the survey. All married women aged <15 years or >45 years were excluded from the study as our study was directed towards reproductive age group only. Those women who were non-cooperative or refused to provide the necessary information were not included in the study.

Optimal sampling size was calculated on the basis of prior prevalence rate of knowledge of EC of 11.0% reported by National Family Health Survey (2005). 9 The sample size was calculated by the formula 4PQ/L2 where P is the prevalence (11.0%), Q is 100-P = 89.0% and L is the allowable error i.e.10%. Sample size came out to be 391, which was rounded off to 400.

All married women aged between 15-45 years present in their respective households selected at the time of survey were taken for the purpose of study after informed consent. Ethical clearance was obtained from Rohilkhand Medical College & Hospital, Bareilly institutional review board. Married women in reproductive age group were chosen as study unit as they would benefit from the correct knowledge and use of EC. The need of EC among married females may arise due to failure of contraceptive method being used (condom rupture, diaphragm slippage, forgotten oral pills) or following sexual assault. We have included only married females in this study as it is easier to assess them regarding EC as compared to the unmarried ones as it is considered culturally inappropriate to question them regarding such sensitive issues.

The study involved the use of a structured predesigned and pretested questionnaire to assess study subjects’ knowledge and use of emergency contraception. The questionnaire was pretested on 20 subjects in the study area. Necessary modifications were made to overcome the difficulties encountered during pretesting.

Dependent variables: Awareness about emergency contraception.

Independent variables: Place of residence, age, religion, type of family, parity, education, occupation, socioeconomic status.

Data regarding socio-demographic characteristics (Age, religion, type of family, education, occupation, and socioeconomic status using modified Prasad’s classification was collected.10 Specific questions related to reproductive history (parity), knowledge and use of emergency contraception were asked.

Data entry and statistical analysis was performed using the Microsoft Excel and SPSS windows version 14.0 software.

RESULTS

Socio-demographic characteristics

Out of 515 female respondents in this study, 258 (50.1%) were from the urban region and 257 (49.9%) were from the rural region. A higher proportion of females was aged between 24-29 yrs (49.5%) and was married after 18 years of age (57.3%). Majority of respondents belonged to low socioeconomic status (95.7%) using modified Prasad’s classification and were Hindus (82.7%).
Table 1: Socio-demographic profile of respondents

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Subjects (%) (n=515)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Place</strong></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>258 (50.1)</td>
</tr>
<tr>
<td>Rural</td>
<td>257 (49.9)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>18-23 yrs</td>
<td>126 (24.5)</td>
</tr>
<tr>
<td>24-29 yrs</td>
<td>255 (49.5)</td>
</tr>
<tr>
<td>&gt;= 30 yrs</td>
<td>134 (26.0)</td>
</tr>
<tr>
<td><strong>Age at marriage</strong></td>
<td></td>
</tr>
<tr>
<td>&lt; 18 yrs</td>
<td>220 (42.7)</td>
</tr>
<tr>
<td>&gt;= 18 yrs</td>
<td>295 (57.3)</td>
</tr>
<tr>
<td><strong>Socioeconomic status</strong></td>
<td></td>
</tr>
<tr>
<td>Lower middle class</td>
<td>22 (4.3)</td>
</tr>
<tr>
<td>Lower class</td>
<td>493 (95.7)</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
</tr>
<tr>
<td>Hindu</td>
<td>426 (82.7)</td>
</tr>
<tr>
<td>Muslim</td>
<td>89 (17.3)</td>
</tr>
<tr>
<td><strong>Education of women</strong></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>332 (64.5)</td>
</tr>
<tr>
<td>Literate</td>
<td>183 (35.5)</td>
</tr>
<tr>
<td><strong>Education of husband</strong></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>220 (42.7)</td>
</tr>
<tr>
<td>Literate</td>
<td>295 (57.3)</td>
</tr>
<tr>
<td><strong>Occupation of women</strong></td>
<td></td>
</tr>
<tr>
<td>Homemaker</td>
<td>490 (95.1)</td>
</tr>
<tr>
<td>Laborer</td>
<td>6 (1.2)</td>
</tr>
<tr>
<td>Service</td>
<td>13 (2.5)</td>
</tr>
<tr>
<td>Other</td>
<td>6 (1.2)</td>
</tr>
<tr>
<td><strong>Parity</strong></td>
<td></td>
</tr>
<tr>
<td>Primiparous</td>
<td>102 (19.8)</td>
</tr>
<tr>
<td>Multiparous</td>
<td>413 (80.2)</td>
</tr>
<tr>
<td><strong>Type of family</strong></td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td>192 (37.3)</td>
</tr>
<tr>
<td>Joint</td>
<td>323 (62.7)</td>
</tr>
</tbody>
</table>

Most were illiterates (could not read and write) (64.5%) and were homemakers (95.1%). A higher proportion of females had literate husbands (57.3%) who could read and write. Most participants were multiparous (80.2%) and belonged to joint families (60.2%). (Table 1)

Knowledge and use of emergency contraception

Nearly a quarter of females had heard about EC. The level of EC awareness was lower among rural females (9.3%) than the urban (17.3%) females, the differences being statistically significant (p-value <0.05). Respondents who were aware of EC most commonly reported that they had first heard about EC from television (68.6%). Majority of those aware knew about pills (91.2%). 59.12% of subjects (n = 137) who had heard of EC knew that they could obtain EC from a chemist.

In addition, most participants (84.5%, n = 515) did not know about the appropriate interval for efficacy between unprotected sex and taking EC. Only 5.0% respondents had ever used an emergency contraception method. Nearly a quarter of respondents said that they would like to use EC in future. (Table 2)

Knowledge about EC was significantly higher among the lower socioeconomic class, Hindus and the literates (Table 3)

Table 2: Awareness, knowledge and use of emergency contraception among currently married women in urban and rural areas of Bareilly

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Urban area (%)</th>
<th>Rural area (%)</th>
<th>Total (%)</th>
<th>Chi-Square df P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever heard about emergency contraception</td>
<td>89 (17.3)</td>
<td>48 (9.3)</td>
<td>137 (26.6)</td>
<td>16.501 1 &lt;0.001</td>
</tr>
<tr>
<td>Source of information</td>
<td></td>
<td></td>
<td></td>
<td>26.756 8 0.001</td>
</tr>
<tr>
<td>Television</td>
<td>59 (11.5)</td>
<td>35 (6.8)</td>
<td>94 (18.3)</td>
<td>27.220 3 &lt;0.001</td>
</tr>
<tr>
<td>Radio</td>
<td>7 (1.4)</td>
<td>4 (0.8)</td>
<td>11 (2.1)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>News paper</td>
<td>6 (1.2)</td>
<td>0 (0.0)</td>
<td>6 (1.2)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Medical literature</td>
<td>2 (0.4)</td>
<td>0 (0.0)</td>
<td>2 (0.4)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Health worker</td>
<td>13 (2.5)</td>
<td>6 (1.2)</td>
<td>19 (3.7)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Friends</td>
<td>2 (0.4)</td>
<td>0 (0.0)</td>
<td>2 (0.4)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Husband</td>
<td>0 (0.0)</td>
<td>1 (0.2)</td>
<td>1 (0.2)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Family</td>
<td>0 (0.0)</td>
<td>2 (0.4)</td>
<td>2 (0.4)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Emergency contraceptive methods known</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pills</td>
<td>80 (15.5)</td>
<td>45 (8.7)</td>
<td>125 (24.3)</td>
<td>17.142 3 &lt;0.001</td>
</tr>
<tr>
<td>IUD</td>
<td>7 (1.4)</td>
<td>2 (0.4)</td>
<td>9 (1.7)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Other</td>
<td>2 (0.4)</td>
<td>1 (0.2)</td>
<td>3 (0.6)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Source of getting EC method</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health worker</td>
<td>14 (2.7)</td>
<td>6 (1.2)</td>
<td>20 (3.9)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Hospital</td>
<td>13 (2.5)</td>
<td>5 (1.0)</td>
<td>18 (3.5)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Chemist</td>
<td>47 (9.1)</td>
<td>34 (6.6)</td>
<td>81 (15.7)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Health centre</td>
<td>15 (2.9)</td>
<td>3 (0.6)</td>
<td>18 (3.5)</td>
<td>21.073 4 &lt;0.001</td>
</tr>
<tr>
<td>Recommended time to take ECPs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>before unprotected sexual intercourse</td>
<td>5 (1.0)</td>
<td>3 (0.6)</td>
<td>8 (1.6)</td>
<td>27.220 3 &lt;0.001</td>
</tr>
<tr>
<td>within 72 hours</td>
<td>55 (10.7)</td>
<td>15 (2.9)</td>
<td>70 (13.6)</td>
<td>27.220 3 &lt;0.001</td>
</tr>
<tr>
<td>more than 72 hours</td>
<td>1 (0.2)</td>
<td>1 (0.2)</td>
<td>2 (0.4)</td>
<td>27.220 3 &lt;0.001</td>
</tr>
<tr>
<td>don’t know</td>
<td>197 (38.3)</td>
<td>238 (46.2)</td>
<td>435 (84.5)</td>
<td>27.220 3 &lt;0.001</td>
</tr>
<tr>
<td>Have ever used an emergency contraceptive method</td>
<td>12 (2.3)</td>
<td>14 (2.7)</td>
<td>26 (5.0)</td>
<td>0.170 1 0.680</td>
</tr>
<tr>
<td>Would like to use emergency contraception in future</td>
<td>44 (8.5)</td>
<td>83 (16.1)</td>
<td>127 (24.7)</td>
<td>16.098 1 &lt;0.001</td>
</tr>
</tbody>
</table>
Table 3: Unadjusted (crude) associations with awareness of emergency contraception among the respondents

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Heard of EC</th>
<th>Not heard of EC</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-23 yrs</td>
<td>36 (7.0)</td>
<td>90 (17.5)</td>
<td>0.832</td>
</tr>
<tr>
<td>24-29 yrs</td>
<td>67 (13.0)</td>
<td>188 (36.5)</td>
<td></td>
</tr>
<tr>
<td>&gt;=30yrs</td>
<td>34 (6.8)</td>
<td>100 (19.4)</td>
<td></td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower middle class</td>
<td>12 (2.3)</td>
<td>10 (1.9)</td>
<td>0.002</td>
</tr>
<tr>
<td>Lower class</td>
<td>125 (24.3)</td>
<td>368 (71.5)</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hindu</td>
<td>122 (23.7)</td>
<td>304 (59.0)</td>
<td>0.022</td>
</tr>
<tr>
<td>Muslim</td>
<td>15 (2.9)</td>
<td>74 (14.4)</td>
<td></td>
</tr>
<tr>
<td>Education of women</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>62 (12.0)</td>
<td>270 (52.4)</td>
<td>0.000</td>
</tr>
<tr>
<td>Literate</td>
<td>75 (14.6)</td>
<td>108 (21.0)</td>
<td></td>
</tr>
<tr>
<td>Occupation of women</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homemaker</td>
<td>129 (25.0)</td>
<td>361 (70.1)</td>
<td>0.186</td>
</tr>
<tr>
<td>Laborer</td>
<td>0 (0.0)</td>
<td>6 (12.0)</td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>5 (1.0)</td>
<td>8 (1.6)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>3 (0.6)</td>
<td>3 (0.6)</td>
<td></td>
</tr>
<tr>
<td>Education of husband</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>34 (6.6)</td>
<td>186 (36.1)</td>
<td>0.000</td>
</tr>
<tr>
<td>Literate</td>
<td>103 (20.0)</td>
<td>192 (37.3)</td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primiparous</td>
<td>30 (5.8)</td>
<td>72 (14.0)</td>
<td>0.473</td>
</tr>
<tr>
<td>Multiparous</td>
<td>107 (20.8)</td>
<td>306 (59.4)</td>
<td></td>
</tr>
<tr>
<td>Type of family</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td>54 (10.5)</td>
<td>138 (26.8)</td>
<td>0.546</td>
</tr>
<tr>
<td>Joint</td>
<td>83 (16.1)</td>
<td>240 (46.6)</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

Nearly a quarter of females had heard about EC in the current study. This is similar to the study by Myer et al (2007) where overall 30% of the women in South Africa had ever heard of EC. Lower level of awareness regarding EC (11%) was reported in National Family Health Survey. Good level of awareness was reported by Kushwah et al (2007) in Madhya Pradesh where about half of the rural female adolescents had knowledge about EC and by Adhikari et al (2009) where about two-thirds of college students in Nepal had ever heard about EC. Although nine in 10 healthcare providers in Nigeria had heard of emergency contraception, but many lacked specific knowledge about the method. Poor level of awareness was also observed by Tripathi et al (2003) among health care providers (gynecologists, general practitioners, paramedical workers, and medical students) in New Delhi where none of the respondents knew about EC. Poor level of awareness was also reported by Mehra et al (2006) in Chandigarh where only 1% of women seeking abortion knew about EC and by Nigam et al (2010) where only 2% of the married females from rural Uttar Pradesh had heard it.

Only 5.0% respondents had ever used an emergency contraception method in this study which is similar to the study from Ethiopia where only 6.8% of graduating female students had used the method. Higher use was observed by Takkar et al (2005) where 10.3% of educated working women had practiced EC. This may be attributed to differences in terms of literacy status and occupation as most of the females in our study were illiterate and homemakers. Higher use of EC (16%) was also reported by Tafuri et al (2012) in Southern Italy and (11.5%) by Irfan et al (2009) among married women of Pakistan. The variation in percentage of knowledge about EC in the above mentioned studies from India as well as abroad can be attributed to the different sociodemographic and cultural patterns of the study populations. The level of knowledge of EC has been increasing in India, both in rural and urban regions. The percentage of knowledge (26.6%) of EC in the current study, confirms this increasing trend.

The level of EC awareness was lower among rural females (9.3%) than the urban (17.3%) females in the current study, the differences being statistically significant (p-value <0.05). This could be attributed to the fact that the females in urban areas are more educated and exposed to sources of information like the media. The other sources of information in this study among the villagers other than media were health workers, family and friends. The health care providers can play an important role by providing adequate knowledge of EC to the villagers as they do not have many sources of information and are illiterate.

Table 4: Multivariate logistic regression analysis of predictors of knowledge of emergency contraception in the total study sample

<table>
<thead>
<tr>
<th>Predictor</th>
<th>β coeff</th>
<th>Odd’s ratio</th>
<th>95%CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place (Urban=1, Rural=2)</td>
<td>0.358</td>
<td>1.430</td>
<td>0.901-2.271</td>
<td>0.129</td>
</tr>
<tr>
<td>Religion (Hindu=1, Muslim=2)</td>
<td>0.487</td>
<td>1.627</td>
<td>0.881-3.005</td>
<td>0.120</td>
</tr>
<tr>
<td>Socioeconomic status (Low=1, Better off=2)</td>
<td>0.872</td>
<td>2.391</td>
<td>0.966-5.920</td>
<td>0.059</td>
</tr>
<tr>
<td>Education of women (Illiterate=1, literate=2)</td>
<td>-0.670</td>
<td>0.512</td>
<td>0.322-0.814</td>
<td>0.005</td>
</tr>
<tr>
<td>Education of husband (Illiterate=1, literate=2)</td>
<td>-0.548</td>
<td>0.578</td>
<td>0.342-0.976</td>
<td>0.040</td>
</tr>
</tbody>
</table>
The respondents in this study who were aware of EC most commonly reported that they had first heard about EC from television (68.6%). Media (69.3%) was also reported the main source of information of EC in a study conducted in Ethiopia by Ahmed et al. Dissimilar results were reported in another study in Ethiopia where the common sources of information reported were friends (36.5%), radio (22.8%) and television (12.3%). Consistent messages regarding EC via television in local languages should be conveyed to bring about a change in the behavior regarding use of EC among the villagers.

Nearly 59.12% of subjects who had heard of EC knew that they could obtain it from a chemist in our study. This is similar to the study conducted among the Nigerian school students where 54.4% obtained their emergency contraceptive drugs from patent medicine store.

In addition, most participants (84.5%) in our study did not know about the appropriate interval for efficacy between unprotected sex and taking EC. This is comparable to a cross-sectional, interviewer-administered survey among 831 sexually active women at 26 randomly selected public sector clinics in the Western Cape province. Most participants (75%, N = 190) who were aware of EC did not know about the appropriate interval for efficacy between unprotected sex and taking EC. In a study by Wallace et al the majority of healthcare providers reported that they were familiar with indications and protocols for prescribing EC, yet knowledge inaccuracies were identified. If this is the scenario among health care providers then one can imagine the knowledge inaccuracy in the rural females. Potential users as well as providers be made aware of correct use of ECP.

Better knowledge (42.4%) about the correct time for taking EC after unprotected sex was observed in the Pakistani study. In a study by Zeleke et al out of 334 university students, who were aware about EC, only 38.6% responded to the correct time of using EC. Poor knowledge was reported by Attahir et al. (2010) in Nigerian adolescent female hawkers and Puri et al (2009) in urban slums of Chandigarh where none of the respondents knew about the correct time span during which EC should be used. "The majority of acceptors was less than 30 years of age and was literate. Nearly a quarter of respondents said that they would like to use EC in future in this study.

Raising public awareness regarding EC can reduce maternal mortality as a significant percentage of it is due to unsafe abortions, taking place in women with unwanted pregnancies. Khan et al (2004) in a study in Bangladesh indicated that introduction of ECP in the National Family Planning Program reduced resorting to abortions to end unwanted pregnancies by one third. A KAP survey on Emergency Contraception was carried out among 190 doctors in Delhi, nearly 82 per cent of them opined that the use of EC would bring down the number of abortions. Emergency contraception is a woman’s last chance to prevent unintended pregnancy. Population studies have not shown that increased access to EC decreases abortion rates; this is likely due to inconsistent and infrequent use even when it is available. Its use does not lead to more risky sexual practices or behaviours.

CONCLUSION

Education was found to be significant predictor of knowledge of emergency contraception in this study.

RECOMMENDATIONS

Our findings show a need to raise public awareness about EC. Information Education Communication about EC should also be strengthened among the health care providers.

Education on methods available, the correct time limit for use, and accurate message about its effect on health through health professionals and mass media should be given. This will help to reduce the number of induced abortions in future. To change attitude towards EC and further increase the level of awareness and usage, collaborated health education and similar studies among health and media workers are highly recommended.

REFERENCES


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Epidemiological Study of Oral Hygiene and Prevalence of Dental Caries in Secondary School Going Children

Pradeep Savale¹, Ruplal Lanjewar²

ABSTRACT

Introduction: Dental caries is one of the most common lifetime chronic diseases affecting the people of all regions and society that had 60%-90% of schoolchildren in most of the developed countries, and in several developing countries involving both deciduous and permanent teeth. The aim of the study is to evaluate the prevalence of dental caries among the secondary school children’s in Yadgir city Karnataka

Materials and Methods: Cross-sectional study of the age group 11-16 years are considered with the sample size of 542 students from 3 different private and one government school. A Pre-tested questionnaire was given to know the information on tooth cleaning practices, dietary habits and dental experience etc, and the data that is collected from each participant is subjected to statistical analysis to know the prevalence of dental caries.

Results: Prevalence of dental caries among secondary school students are 62.36% (N=338), which is slightly more in boys compared to that of girls i.e. 73.5% & 70.9% respectively.

Conclusions: Caries are more in boys compared to that of girls, and are common with primary dentition than permanent dentition

Key words: Dental caries, Dental habitat, Dental care precautions, Deciduous and Permanent teeth.

INTRODUCTION

Dental caries is a significant but a preventable public health problem that defines the standard of health and other related conditions which can also enables an individual to eat, speak, and socialize without active disease, discomfort or embarrassment and which contributes to general well-being

¹. Caries are the breakdown of teeth due to acids caused by bacteria, which are of different colour from yellow to black. The earliest sign is the appearance of a chalky white spot on the surface of the tooth, indicating an area of demineralization of enamel. As the lesion continues to dematerialize, it can turn brown but will eventually turn into a cavity. Once the enamel and dentin are destroyed, affected areas changes its colour and become soft to the touch effecting nerves of the tooth resulting in pain and it will turn worst on exposure of heat, cold, or sweet foods and drinks that may lead to

Complications such as inflammation of the tissue around the tooth, tooth loss, and infection or abscess formation.

Worldwide, approximately 2.3 billion people (32% of the population) have dental caries in their permanent teeth. The WHO estimates that nearly all adults have dental caries at some point in time. In baby teeth it affects about 620 million people or 9% of the population. They have become more common in both children and adults in recent years.

The disease is most common in the developed world and a smouldering disease in the some developing countries like India. The major factors are inadequate resources for dental treatment, lack of public awareness, and motivation with increased intake of carbohydrates, poor oral hygiene, fluorosis, enamel defects, various measures of low socioeconomic status & low level of parental education.
etc. Geographical location plays a great role in caries prevalence, and it varies with the change in location to location. According to the National Oral Health Survey report 2004.

Caries prevalence in India was 51.9%, 53.8%, and 63.1% at ages 5, 12, and 15 years, respectively, in different parts of India.

The level of oral health knowledge and practices in secondary school students is necessary which requires proper investigation and this study aimed to assess the level of oral health knowledge and practices among secondary school students.

**MATERIALS & METHODS**

A cross-sectional study is carried out in Yadgir city area to assess the prevalence of dental caries among secondary school children from 3rd to 26th April 2018 (i.e. for 24 days). A total of 2 private & 1 public secondary schools were chosen for the study, with a response of about 89% which is followed with written consent, a self-administered questionnaire that can assess the level of oral health knowledge and practices of students. The clinical examination was done by one dentist assisted by three dental assistants over a period for recording the data. As per Standard infection control guidelines all the recordings were carried out in the daylight, and the child was made to sit in ordinary chair facing away from a direct sunlight.

The oral examination of the study subjects was conducted in respective schools using, a plane mouth mirror under natural light and a community periodontal index (CPI) probe, as indicated by the WHO.

**RESULTS**

Table 1 shows that the total study population of 542 children’s ranging from 11 to 16 years with 191 is Girls & 351 are boys (Mean and SD of age is 13.59 ± 1.713 years)

Table 2 indicates the total prevalence of caries among the school children is 62.36% and the total prevalence of caries among boys is slightly high compared to that of girls i.e. 73.5% and 70.9% respectively.

Table 3 indicates the irregular distribution of primary and secondary caries in respective of age groups in girls and boys, where primary caries is more in age 11 & 12 years boys compared to that of girls, but in age group 13-16 primary caries is more in girls than boys. Whereas secondary is more in girls in almost all the ages except 14 years.

The number of students who had an acceptable level of frequency brushing teeth (i.e. twice a day) is less than 20% among them age group 13& 15 years show slightly high frequency than others.

Table 4: Percentage of student's among Different age levels having oral health knowledge & practices

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>Twice a day Brushing habit (%)</th>
<th>Knowledge on importance of dental checkup (%)</th>
<th>Ever visited a dental Clinic (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>11 (13.14)</td>
<td>9 (10.98)</td>
<td>14 (17.07)</td>
</tr>
<tr>
<td>12</td>
<td>15 (16)</td>
<td>15 (16.48)</td>
<td>17 (18.68)</td>
</tr>
<tr>
<td>13</td>
<td>17 (19.2)</td>
<td>12 (13.95)</td>
<td>13 (15.12)</td>
</tr>
<tr>
<td>14</td>
<td>17 (19.4)</td>
<td>17 (19.1)</td>
<td>17 (19.1)</td>
</tr>
<tr>
<td>15</td>
<td>19 (19.7)</td>
<td>17 (17.89)</td>
<td>16 (16.84)</td>
</tr>
<tr>
<td>16</td>
<td>14 (14.6)</td>
<td>21 (21.21)</td>
<td>14 (14.14)</td>
</tr>
</tbody>
</table>

The knowledge on importance or awareness on dental check up is more in age group 16 & 14 years compared to other age children’s but the students percentage who visited dental clinic is slightly high from age group 14, 12 &11 years (Table 4).
Majority of the study subjects are reported to have an acceptable level of practice of frequency of sugary food consumption but students of age group from 12, 15 &16 years students are reported with high levels of sugar consumption compared to that of 11-13 years students respectively (Table 5).

DISCUSSION

Many studies have been conducted to identify the prevalence of caries in different parts of India. However, in the present study, the prevalence of dental caries is 62.36% without major difference among boys and girls but had more caries in primary dentition when compared to permanent dentition. This is similar to the reports of some other studies. This could be attributed to the fact permanent teeth has high susceptibility among deciduous teeth due to low calcium content and structural differences in deciduous teeth.

The prevalence of caries in our study was slightly higher in boys than girls which is similar to that of Moses et al., Joshi et al. The increased prevalence of caries in the boys may be due to the preferential feeding habitats compared to that of girls in the home and may due to snacking habit among boys during the longer outside stay.

Results from this study revealed a high proportion of students have adequate level of knowledge on oral health, such as causes, prevention, and signs of dental caries and these findings are similar to those reported in other studies done in Tanzania, and Kuwait. This could be the result of either oral health education that they might have at primary school standards or may have acquired through the media.

Most of the students had adequate knowledge on importance of regular dental visits, and although this may be the truth, Kikwilu et al. reported that only a quarter of those who experienced oral pain or discomfort sought emergency oral care from oral health care facilities.

Nearly all of the students had an acceptable level of practice on frequency of sugary food consumption as recommended by the recent systematic analysis that free (added) sugar should remain below 10% of the energy intake and the consumption of food/drinks containing free sugars should be limited to a maximum of four times per day. Contrary to the reported findings, Masalu et al. found that female students were more likely believe in limited sugar consumption than their male counterparts.

Caries and chronic periodontitis diseases which are considered as public health problems may be influenced by effective and regular self tooth brushing. Although in our study twice-a-day tooth brushing has been reported, only 39.29% of students had an acceptable practice of brushing teeth at an interval of twelve hours as recommended showing that students are not informed on the importance of brushing twice a day at an interval of twelve hours.

CONCLUSIONS

Prevalence of dental caries among secondary school students are 62.36% (N=338), which is slightly more in boys compared to that of girls i.e. 73.5% & 70.9% respectively, and the caries prevalence in primary dentition in males is 63.6%, in females is 65.1% were as in permanent dentition was in males is 26.2%, in females is 26.17%. The number of students who had an acceptable level of frequency brushing teeth (i.e. twice a day) is less than 20% shows that both parents and students need proper awareness about their oral hygiene oral practices and importance of regular dental checkups, which can be provided by encouraging the dental health camps in the schools. The one who are effect need to be identified and treated at its earliest possible stage to avoid further complication

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Risk Factors and Socio-Demographic Profile in Patients with Attempted Suicide in a Tertiary Care Centre, Bengaluru: A Cross-Sectional Study

Kavya M Alalageri1, Shobha S2, Ranganath T S3

ABSTRACT

Context: A high suicide rate is an index of social disorganization. In India, it is the second leading cause of death among 15-29 years age group. Young age, female sex, poor education, unemployment and socio economic deprivation are some of the potential risk factors. The study conducted to assess the risk factors and socio-demographic profile in patients with attempted suicide in a tertiary care centre.

Methods and Material: A Cross Sectional Study was conducted among 476 suicide attempted patients by convenient sampling from January 2016 to May 2017. Data was collected by using a pre-tested, semi-structured questionnaire.

Results: Mean age of study participants was 30.65±0.75 years. 57.78% of them were males. Hindus (82.98%) were predominant among the cases. Most of the suicide victims (82.97%) were from nuclear families. 24.57% of study participants had family history of suicide. There was no significant association between socio-demographic factors like education, occupation and socio-economic class and the number of previous attempts.

Conclusion: Suicides and attempted suicides are slowly but steadily assuming the levels of a public health problem caused by multiple factors. Hence there is a need to address the risk factors for suicide attempts and preventing them by taking proper measures at individual, family and societal level.

Keywords: Suicide, risk factors, suicide intent, socio-demography

INTRODUCTION

Suicide is a serious public health problem. Suicide is the act of deliberately killing oneself. Suicide attempt is defined as a behaviour of having strong urge to end one’s life.1 Close to 8,00,000 people die due to suicide every year. For every suicide there are many more people who attempt suicide. A prior suicide attempt is the single most important risk factor for suicide in the general population.2 Suicide is the second leading cause of death among 15-29-year-old. 78% of global suicides occur in low- and middle-income countries.3

Suicides have been increasing at an alarming rate in South East Asian countries especially India. Annual incidence rate of suicide is about 36 per lakh population in India.4 Nearly 70% of suicides in our country have been reported in the age group of 15-34 years. Daily an average of 369 suicides take place, out of which 248 are males and 121 are females.5

The story of suicide is probably as old as that of man himself. It has been glorified, romanticized, grieved and even condemned.6 In Hinduism, the Bhagavadgita, Vedas and Upanishads, the Holy Scriptures - condemn suicide ‘he who takes his own life will enter the sunless areas covered by impenetrable darkness after death’. Except few
instances like Sati system, drowning at the confluence of rivers to attain punya, self destruction for incurable diseases.

In Islam, suicide is prohibited. In Christianity, suicide is considered a sin.

Risk factors:

Essential elements of the history include the past medical and psychiatric history, home and social life activities, and medications. Patients who haven’t attempted suicide but who present with a history of depression, substance abuse, anxiety, or other psychiatric disorders should routinely be assessed for suicidal ideation.

Demographic data and risk factors can help the physician determine the degree of risk. Presence or absence of risk factors does not completely rule out suicidal ideation. Factors such as psychiatric disorders (mood disorders, substance abuse, psychotic disorders, personality disorders), previous suicide attempts, family history of suicide, history of being sexually abused, serious physical illness (especially HIV, dialysis, or conditions causing incapacitating, chronic pain), prior outpatient psychiatric treatment or psychiatric hospital admission within the past year, recent stressful interpersonal, legal, financial, or work-related life events, and impulsive or aggressive tendencies may therefore help risk-stratify patients.

Who is at risk?

While the link between suicide and mental disorders in particular, depression and substance abuse disorders like alcohol is well established in high-income countries, many suicides happen impulsively in moments of crisis with a breakdown in the ability to deal with life stresses, such as financial problems, relationship break-up or chronic pain and illness. In addition, areas experiencing conflict, disaster, violence, abuse, or loss are strongly associated with suicidal behavior. Suicide rates are also high amongst vulnerable groups who experience discrimination, such as refugees and migrants, indigenous peoples, lesbians, gays, bisexuals, transgenders and prisoners. By far the strongest risk factor for suicide is a previous suicide attempt.

Predicting suicide:

In a 10-year prospective study of patients admitted with suicidal ideation, Beck et al. found that only the Hopelessness Scale and pessimism items on the Beck Depressive Inventory predicted suicides. A score of 10 or more on the Hopelessness Scale correctly identified 91% of eventual suicides.

Scales used to identify suicidal risk include SAD PERSONS scale, Beck Suicidal Intent Scale and the Suicidal Intent Questionnaire (SIQ) validated in the Indian setting. The SIQ consists of a 10-item questionnaire which is scored as 0, 1 or 2. In a more recent study of communication of suicidal intent among suicide attempters, Srivastava et al. reported that the majority of the sample (73.3%) communicated suicidal intent using the SIQ.

WHO response

WHO recognizes suicide as a public health priority. The first WHO World Suicide Report “Preventing suicide: a global imperative” published in 2014, aims to increase the awareness of the public health significance of suicide and suicide attempts and to make suicide prevention a high priority on the global public health agenda. Suicide is one of the priority conditions in the WHO Mental Health Global Action Plan (mhGAP) launched in 2008, which provides evidence-based technical guidance to scale up service provision and care in countries for mental, neurological and substance use disorders. In the WHO Mental Health Action Plan 2013-2020, WHO Member States have committed themselves to working towards the global target of reducing the suicide rate in countries by 10% by 2020. With this scenario, this study is proposed to assess risk factors and socio demographic profile of suicide attempted individuals in a tertiary care centre.

OBJECTIVES

The present study was conducted to assess the risk factors in patients with attempted suicide and also to study the socio-demographic profile of patients with attempted suicide.

METHODOLOGY

Sample Size Estimation: Based on a previous study by of Gowda.N major risk factor suicidal attempts was family problems (p=27.2%), with allowable error of 15%, sample size is calculated by 4pq/d2 where n is sample size, p is prevalence (27.2%), q is 100 – p and d is the allowable error (4.08). The calculated Sample size was 476.

Data collection was started after obtaining clearance from the Institution Ethical Committee. Permission was obtained from the Dean, Medical superintendent of Victoria hospital for conducting the study. Informed consent for the study was obtained from the study participants, and if required from the attendees or guardians. Patients admitted with history of suicide attempts were filed as MLC in casualty later once they become stable, they were shifted to Medicine C Block of Victoria Hospital. Such cases were taken up for study and data regarding socio demographic profile and risk factors were collected.
by interview method using a semi-structured questionnaire until sample size of 476 is achieved during the period from January 2016 to May 2017. Repeated visits were carried out to the medicine block regarding elicitation of history and counselling sessions. Confidentiality was maintained.

Mental health care bill was passed by parliament on 27th March, 2017 stated that suicide act should be decriminalized. A person who attempts suicide should be presumed to have severe stress and shall not be punished.17

Data was entered in SPSS V.23 and analysed using descriptive statistics.

Statistics: Results are presented in terms of frequencies and percentages. Chi square was applied to find the association between variables. P value < 0.05 is considered significant. Charts, tables and graphs are added wherever necessary.

RESULTS

In our study, mean age of the study participants was 30.65+ 0.75 years. More than half of the suicide victims (67%) were aged between 16-30 years followed by 31-45 years (23.5%) age group. Least cases of suicide were reported among the victims whose age group was between 61-75 years (3.2%). Among the study subjects, 275 (57.78%) were males and 201 (42.22%) were females. Urban locality (66.81%) was the most common place of residence for study participants than rural (33.19%). 68.9% of the study participants were literates. 80.25% of the study subjects were employed. Students, the age group being most vulnerable accounted for 9.24% of study subjects and 6.3% were retired from their job. Most of the study participants (82.77%) belonged to Nuclear family. Most of the study participants (51.68%) belonged to upper middle class followed by upper class (24.15%) and middle class 21.63%). Lower middle class and lower class accounted for 1.47% and 1.05% respectively as depicted in table1.

If we see the habits of study subjects,19.53% of them were alcoholic and 10.29% of them were smokers and 3.78% of them had both alcohol and smoking habits. About 66.38% of them had no habits.24.57% of the study participants had family history of suicide and only 15.3% of them had history of psychiatric illness. About 49.36% of them had intent of suicide during the last 12 months and 34.5% of them had history of previous attempts. 26.68% of the close family members of the study subjects attempted suicide and 30.88% of the study participants had their close family members who did not attempt suicide. 42.43% of them refused to reveal about their close family members attempting suicide.

<table>
<thead>
<tr>
<th>Socio-demographic factors</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age-group</td>
<td></td>
</tr>
<tr>
<td>16-30 years</td>
<td>319 (67)</td>
</tr>
<tr>
<td>31-45 years</td>
<td>112 (23.5)</td>
</tr>
<tr>
<td>46-60 years</td>
<td>30 (6.3)</td>
</tr>
<tr>
<td>61-75 years</td>
<td>15 (3.2)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>275 (57.78)</td>
</tr>
<tr>
<td>Female</td>
<td>201 (42.22)</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
</tr>
<tr>
<td>Hindu</td>
<td>395 (82.98)</td>
</tr>
<tr>
<td>Muslim</td>
<td>74 (15.54)</td>
</tr>
<tr>
<td>Christian</td>
<td>7 (1.47)</td>
</tr>
<tr>
<td>Locality</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>318 (66.81)</td>
</tr>
<tr>
<td>Rural</td>
<td>158 (33.19)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Literate</td>
<td>328 (68.9)</td>
</tr>
<tr>
<td>Illiterate</td>
<td>148 (31.09)</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>44 (9.24)</td>
</tr>
<tr>
<td>Employed</td>
<td>382 (80.25)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>20 (4.2)</td>
</tr>
<tr>
<td>Retired</td>
<td>30 (6.3)</td>
</tr>
<tr>
<td>Type of family</td>
<td></td>
</tr>
<tr>
<td>Nuclear family</td>
<td>394 (82.77)</td>
</tr>
<tr>
<td>Joint family</td>
<td>59 (12.39)</td>
</tr>
<tr>
<td>Three generation family</td>
<td>23 (4.83)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Unmarried</td>
<td>207 (43.48)</td>
</tr>
<tr>
<td>Married</td>
<td>192 (40.33)</td>
</tr>
<tr>
<td>Divorced/separated</td>
<td>31 (6.51)</td>
</tr>
<tr>
<td>Widow/widower</td>
<td>46 (9.66)</td>
</tr>
<tr>
<td>Socio-economic class of study participants</td>
<td></td>
</tr>
<tr>
<td>Upper class</td>
<td>115 (24.15)</td>
</tr>
<tr>
<td>Upper middle class</td>
<td>246 (51.68)</td>
</tr>
<tr>
<td>Middle class</td>
<td>103 (21.63)</td>
</tr>
<tr>
<td>Lower middle class</td>
<td>7 (1.47)</td>
</tr>
<tr>
<td>Lower class</td>
<td>5 (1.05)</td>
</tr>
</tbody>
</table>

About 9.88% of close family members of study subjects died due to suicide attempt and 42.85% of the study participants had their close family members who had died due to attempt.47.26% of them refused to reveal about the deaths of their close family members due to suicide attempts as mentioned in table 2.

Most common mode of attempt was Poisoning (78.57%). Among poisoning cases, household poisoning (33.61%) including rat poisoning and consumption of phenol followed by Organophosphorus poisoning (28.15%) and other poisoning (16.80%). The least common modes of attempt were from burns (4.41%), Self-injury by the use of razor/knife (1.68%) and partial hanging (0.84%).54% of study subjects sought medical care after the suicide attempt and 29.83% of them did not seek medical care.
Table 02: Distribution of risk factors for attempting suicide by study subjects (N=476)

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Habits</strong></td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>93 (19.53)</td>
</tr>
<tr>
<td>Smoking</td>
<td>49 (10.29)</td>
</tr>
<tr>
<td>Both</td>
<td>18 (3.78)</td>
</tr>
<tr>
<td>No habits</td>
<td>316 (66.38)</td>
</tr>
<tr>
<td><strong>Family history of suicide</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>117 (24.57)</td>
</tr>
<tr>
<td>No</td>
<td>271 (56.93)</td>
</tr>
<tr>
<td>Refused to respond</td>
<td>88 (18.48)</td>
</tr>
<tr>
<td><strong>History of psychiatric illness</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>73 (15.33)</td>
</tr>
<tr>
<td>No</td>
<td>352 (73.94)</td>
</tr>
<tr>
<td>Refused to respond</td>
<td>51 (1.02)</td>
</tr>
<tr>
<td><strong>Intent of suicide in last 12 months</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>235 (49.36)</td>
</tr>
<tr>
<td>No</td>
<td>130 (27.31)</td>
</tr>
<tr>
<td>Refused to respond</td>
<td>111 (23.31)</td>
</tr>
<tr>
<td><strong>History of previous suicide attempts</strong></td>
<td></td>
</tr>
<tr>
<td>No attempts</td>
<td>312 (65.5)</td>
</tr>
<tr>
<td>More than one attempt</td>
<td>164 (34.5)</td>
</tr>
<tr>
<td><strong>Close family members suicide attempts</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>127 (26.68)</td>
</tr>
<tr>
<td>No</td>
<td>147 (30.88)</td>
</tr>
<tr>
<td>Refused to respond</td>
<td>202 (42.43)</td>
</tr>
<tr>
<td><strong>Deaths of Close family members due to suicide</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>47 (9.88)</td>
</tr>
<tr>
<td>No</td>
<td>204 (42.85)</td>
</tr>
<tr>
<td>Refused to respond</td>
<td>225 (47.26)</td>
</tr>
</tbody>
</table>

Table 03: Distribution of mode of Suicide attempt and later phase of events by participants (N=476)

<table>
<thead>
<tr>
<th>Events during/after the suicide attempt</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mode of attempt</strong></td>
<td></td>
</tr>
<tr>
<td>Poisoning</td>
<td>374 (78.57)</td>
</tr>
<tr>
<td>Medication overdose</td>
<td>69 (14.49)</td>
</tr>
<tr>
<td>Burns</td>
<td>21 (4.41)</td>
</tr>
<tr>
<td>Self-injury by Razor/knife</td>
<td>8 (1.68)</td>
</tr>
<tr>
<td>Partial hanging</td>
<td>4 (0.84)</td>
</tr>
<tr>
<td><strong>Seeking Medical care after the attempt</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>259 (54.1)</td>
</tr>
<tr>
<td>No</td>
<td>142 (29.83)</td>
</tr>
<tr>
<td>Refused to respond</td>
<td>75 (15.75)</td>
</tr>
<tr>
<td><strong>Overnight hospitalization after the attempt</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>237 (49.76)</td>
</tr>
<tr>
<td>No</td>
<td>95 (20.19)</td>
</tr>
<tr>
<td>Refused to respond</td>
<td>144 (30.25)</td>
</tr>
</tbody>
</table>

15.75% of them refused to answer about seeking medical care after the attempt. About half of the study subjects (49.79%) were admitted to hospital on the same day of attempting suicide. 19.96% of them were not admitted to hospital on the same day of attempt. 30.25% of them refused to answer about their overnight hospitalization after the attempt as mentioned in table 3.

Only 128 (26.89%) study participants sought professional help for suicidal attempt thoughts while 183 (38.44%) did not seek any professional help. 165 (34.66%) study participants refused to answer about seeking any professional help for the suicidal thoughts as depicted in figure 1.

**DISCUSSION**

In this cross-sectional study, mean age group of study participants was 30.65±0.75 years. Most common age group affected was 16-30 years. Many other Indian studies supported this. A study conducted by Ramdurg et al 18 showed that the mean age group was 31.5 yrs. Another study conducted by Gowda.N et 13 said mean age group of study participants was 30.41 years. Nilamadhab et al 19 also said that mean age group affected was 31.6+3.5 years. However some studies also contradicted our findings. A Study by Bhola et al 20 revealed that mean age group of suicide attempters was 16.4+0.83 years and other study conducted by Siddhartha et al 21 showed that 15-18 years was the age group that was the most common affected.

Males (57.78%) are most commonly affected than females (42.22%) in our study. Other studies supported our findings. Study by Ramdurg et al 18 showed that 56% of males and 44% of females were affected. Bhola et al 20 also concluded that 57.5% of them were males and 42.5% were females. Gowda et al 16 also said that 61.3% were males and 38.7% were females.

Hindus (82.98%) are the most affected study subjects in our study because the area which has a tertiary care centre had more of hindu residents. Other studies supported our findings. Ramdurg et al 18 showed that 96% of them were Hindus followed by other religion. Gowda N et al 16 showed that 94.6% of study participants were Hindus. Siddhartha et al 21 also concluded that Hindus were at higher risk of attempting suicide.

If we see marital status of study participants, Unmarried people (43.8%) are at a little higher risk of developing suicidal behaviour than married people (40.33%) this may be due to the most common affected age group in our study. In contradictory to the above findings, Ramdurg et al 18 said that married people (59%) were at higher risk of attempting suicide than unmarried. Gowda et al 16 also concluded that 62.4% of study participants were married and 33.9% were unmarried. Indian report on Suicide 2015 says that 70.3% of suicide victims were married followed by 3.5% of divorced and separated couples and 3.7% of widow and widower which is also in favour of our study results.

Family structure and family environment plays an important role in the mental status of an individual. Nuclear families (82.77%) are the most affected than other type of families. This is because nuclear families are bound to higher level of stress...
and there is no support from elders to cope up with stress. There are no helping shoulders for such families. Many Indian studies supported our findings. Ramdurg et al. concluded that 41% of suicide victims belonged to nuclear families. Bhola et al. also showed that 72.4% of suicide victims were from nuclear families. Another study by Gowda N et al. said that 55% of nuclear families attempted suicide. But one study by Nilamadhab et al. predicted that extended families are at a higher risk of developing suicidal behaviour than nuclear families.

Most of the diseases run in families. In the same way, family history of suicide attempts was seen in 24.57% of cases and 15.33% of history of previous suicide attempts. Ramdurg et al. concluded that 26% of cases had previous suicide attempts. Other study by Nilamadhab et al. showed that multiple attempters reported to have chronic symptoms, poor coping skills and family history of suicide behaviour.

The most common method of suicide attempt was by Household poisoning (33.61%) followed by organo-phosphorus poisoning (28.51%) and the least common method was partial hanging (0.84%). Ramdurg et al. concluded that corrosive poisoning (30%) was the most common mode followed by insecticide poisoning (22%). Gowda N et al. showed in his findings that 66.3% of suicide victims consumed organo-phosphorus compounds for attempt followed by medication overdose (17.83%). Another study by Siddhartha et al. showed that 26.8% of suicide victims took overdose of medicines followed by 25.8% of them consumed poisons. Indian report on suicide 2015 also said that 29.5% of suicide attempters consumed poisons. Nilamadhab et al. concluded that 44.3% of cases attempted suicide by pesticides consumption followed by 31.3% cases of oleander poisoning and 24.5% of cases by overdose of medication.

54% of our study participants sought medical care after the attempt. Some of the study participants refused to seek medical care because they thought death was possible from the attempt. A study conducted by Siddhartha et al. concluded that almost 75.3% of suicide victims did not seek medical care. This depicts either the desperateness of suicide victims towards ending their life or there was no nearby health centre for accessibility of treatment facility.

CONCLUSION

Suicides are hidden and unrecognized epidemic in the Indian region affecting predominantly younger age group. In this study, most of the study participants belonged to 16-30 years age group. This depicts the loss of younger generation to suicides which can be prevented after taking proper interventions.

The impact of urbanization, industrialization, economic liberalization and changing values of people had profound effects on the health of communities. This can be addressed by regular screening for mental health at primary health care level and regular counselling sessions for the cases with attempted suicides after evaluating their mental health. Hence there is an urgent need to address the above mentioned risk factors and frame policies with proper interventions which should be accessible to all in order to lead a mentally healthy and peaceful life.

Acknowledgement: I would like to extend my thanks and gratitude to Dean cum Director of BMCRI, Medical Superintendent of Victoria Hospital, Study participants and fellow post graduates.

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Correlates of Complementary and Alternative Medicine (CAM) Use by Cancer Patients in Chandigarh

Dinesh Kumar1, Naveen K Goel2, Awadhesh K Pandey3, Ravleen K Bakshi4

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ABSTRACT

Introduction: The recent increase in the interest of CAM can be attributed to technological, economic, cultural and social trends. The present study aimed at exploring the correlates of CAM usage by cancer patients in Chandigarh.

Methods: Present hospital based cross sectional study was conducted among cancer patients attending Radiotherapy Outpatient Department (OPD) of a Government Medical College and Hospital (GMCH). A total of 1,117 were included. Statistical methods like normal test of proportions, Chi square ($\chi^2$) test, and logistic regression analysis for estimation of risk factors of CAM use were applied using SPSS 16 software package.

Results: Among 214 new patients 120(56.1%) were using CAM as compared to 312(34.6%) among 903 patient who revisited the GMCH. Maximum CAM use was reported among aged 36-49 years (40.9%). Non-Hindu responders were found to be at significantly higher risk of CAM use (P< 0.03). Among 432 users, 162 (37.5%) were of the opinion that allopathy was better than CAM.

Conclusions: The high utilization of CAM among cancer patients urge need of conducting further in depth epidemiological studies to evaluate the efficacy of various CAM therapies in use for cancer with active participation from CAM providers/healers to attain some logical conclusions.

Keywords: Alternative Therapy Complementary and Alternative Medicine (CAM); Conventional Medicine; Holistic Approach, India.

INTRODUCTION

Complementary and Alternative Medicine (CAM) is a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine. CAM is any medical system, practice, or product that is not thought of as standard care. Standard medical care is care that is based on scientific evidence. For cancer, it includes chemotherapy, radiation, biological therapy, and surgery. CAM is defined as "diagnosis, treatment and/or prevention which complements mainstream medicine by contributing to a common whole, by satisfying a demand not met by orthodoxy or by diversifying the conceptual frameworks of medicine". The American National Centre for Complementary and Alternative Medicine (NCCAM) cites examples including Naturopathy, Chiropractic Medicine, Traditional Chinese Medicine, Other Traditional Medicines, Ayurveda, Meditation, Yoga, biofeedback, Hypnosis, Homeopathy, Acupuncture, and Nutritional-based Therapies, Touch Therapies, Siddha, Colour Therapy, Aroma Therapy, Chiropractic Therapy, Reiki, Acupuncture, Unani, Yoga, Massage in addition to a range of other practices. Complementary and alternative medicine (CAM) is generally used to refer to a range of non-indigenous, unorthodox practices including homeopathy, natu-
ropathy, herbalism etc. Medical professionals divide CAM into two main categories; Complementary therapy is nonstandard cancer treatment that is used alongside traditional treatment, while alternative therapy is nonstandard treatment used in place of traditional methods/ standard medical treatments.

The recent increase in the interest and growth CAM can be attributed to many reasons including technological, economic, cultural and social trends. Its growth is also fueled by the rising dissatisfaction with the traditional health care and delivery of medicine. Additionally, the internet access to alternative medicine can also be attributed to increased use of CAM. The number of patients seeking alternate and herbal therapy is growing exponentially. It has been estimated that two-thirds of the world’s population seek health care from sources other than conventional biomedicine. Natural medicines are considered to be in great demand because of their efficacy, safety and lesser side effects. Increased side effects of drugs, lack of curative treatment for several chronic diseases, high cost of new drugs, microbial resistance and emerging diseases are some reasons for renewed public interest in complementary and alternative medicines. The present study aims at exploring the correlates of CAM usage the by cancer patients attending GMCH Chandigarh, a tertiary health care facility providing health care to patients from several states, and also to investigate their misunderstandings/ misconceptions using a multi-factorial approach.

MATERIALS AND METHODS

The study was conducted at Outpatient Department (OPD) Government Medical College and Hospital (GMCH), a tertiary healthcare facility in Chandigarh (UT), North India, during June 2012 to May 2014 to investigate CAM usage patterns among cancer patients and also to explore opinions of cancer patients. Cancer patients attending Radiotherapy of GMCH satisfying following inclusion criterion were included in the study:

Inclusion Criterion: Patients with confirmed diagnosis of any type of cancer irrespective of age, gender, site and staging of cancer approaching for allopathic treatment at the studied health facility for the first time willing to participate in the study were included. Close relatives of patients accompanying the patient also served as respondents to provide information regarding patient under some circumstances wherein patient was not in the condition to give the information.

Exclusion Criterion: Patients not undergoing allopathic treatment for cancer at the health facility or not willing to participate in the study due to any reason were excluded.

Study Design

A cross-sectional study design was adopted among patients of different types of cancer at different stages approaching for allopathic treatment at the health facility.

Sampling Design

A systematic sampling design was adopted to select patients attending the Radiotherapy OPD of the health facility. There were about 40–50 patients attending the OPD every day. Among them only new patients were included in a systematic manner selecting every third patient with a random start every day. Patients revisiting the OPD were excluded while selecting the sample.

Information collected/study variables

Patients suffering from cancer and/or their close family members and healthcare providers served as respondents. They were interviewed to collect information regarding personal and family characteristics, beliefs and practices related with CAM, sources of CAM awareness, perceived reliefs/benefits of CAM use, and positive and negative motivations concerning CAM. Information was collected using interview schedule. Patients were interviewed and in case they were not in the condition of giving information due to any reason, their family members/close relatives accompanying them served as respondents.

Outcomes

Primary outcome measure for this study was reported use of CAM by studied cancer patients undergoing allopathic treatment at their own. Secondary measures included CAM awareness and usage patterns, factors affecting CAM use and perceived reasons and reliefs felt etc.

Optimum Sample Size

Power analysis was done to calculate optimum sample size for the proposed study. Sample size was calculated by using the following formula with approximation for large population:

\[ n = \frac{Z^2 \times (1-P)}{\epsilon^2 P} \]

Where, \( P \) = anticipated population proportion, \( 1-\alpha \) = confidence coefficient, \( \epsilon \) = relative precision, and \( Z() \) is the value of standard normal variate.

On the basis of 60% CAM use as primary outcome parameter anticipated on the basis of a pilot survey findings and assuming 95% confidence coefficient and 5% relative precision (not an absolute precision), optimum sample size of 1,024 cancer patients
was obtained. This study covered a sample of 1,117 cancer patients.

Ethical Issues

Ethical Guidelines of ICMR (2006) on human participants were followed. A written informed consent was taken from the patients. Approval from Institutional Ethics Committee was taken for conducting the study.

Statistical Methods

Statistical methods like normal test of proportions, Chi-square ($\chi^2$) test, and Logistic Regression Analysis for estimation of risk factors of CAM use, analysis of variance (ANOVA) technique, etc., were applied to carry out the data analyses using Statistical Package for Social Sciences (SPSS)-16 software package.

RESULTS

User rates of different CAM therapies were calculated according to patient’s characteristics presented in Table -1. Among 214 new patients 120(56.1%) were using CAM as compared to 312(34.6%) among 903 patient who revisited the health facility. CAM user rates among males and females were found to be 39.3% and 38.1% respectively. CAM use was not found to be significantly associated with gender ($P=0.7$). Maximum CAM use was reported among patients aged 36-49 years (40.9%) followed by those in the age group 50-59 years (39.2%). CAM use among respondents of low socio economic status was found to be 39.3% as compared to 39.1% among respondents of high socio-economic status. Among vegetarian patients, 247(36.8%) and among non-vegetarian patients 185(41.6%) were using CAM. There was no significant difference ($P>0.10$) between CAM Users rates among rural (39.0%) and urban (38.5%) backgrounds. Among illiterate respondents, CAM user rates were found to be 39.0% as compared to 48.4% among graduates. CAM user rate was comparatively higher among respondents having family history of cancer. However the association was found to be non significant ($P =0.30$). There were 378(39.1%) CAM users among patients aware of disease as compared to 53 (35.6%) among those who were not aware of the disease. CAM use rate was found to be maximum for prostate cancer (56.3%) followed by breast cancer (41.2%).

Patients represented different stages of different types of cancer as shown in Table-2. However, since definitions /criterion of staging of cancer is complex for different types of cancer and relevant stages need site specific cases, the exact distribution of cancer stages of 202 (18.1%) cases could not be ascertained during study.

### Table -1 a): User Rates of CAM therapies according to the patient characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Base</th>
<th>CAM Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No (%)</td>
<td>Yes (%)</td>
</tr>
<tr>
<td>Nature of patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Patient</td>
<td>214</td>
<td>94 (43.9)</td>
</tr>
<tr>
<td>Revisit</td>
<td>903</td>
<td>591 (65.4)</td>
</tr>
<tr>
<td>Referred from</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govt. hospital</td>
<td>258</td>
<td>166 (64.3)</td>
</tr>
<tr>
<td>Private Hospital</td>
<td>350</td>
<td>219 (62.6)</td>
</tr>
<tr>
<td>Private Practitioner</td>
<td>27</td>
<td>19 (70.4)</td>
</tr>
<tr>
<td>None</td>
<td>482</td>
<td>281 (58.3)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>501</td>
<td>304 (60.7)</td>
</tr>
<tr>
<td>Female</td>
<td>616</td>
<td>381 (61.9)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;21</td>
<td>44</td>
<td>30 (68.2)</td>
</tr>
<tr>
<td>21-35</td>
<td>93</td>
<td>59 (63.4)</td>
</tr>
<tr>
<td>36-49</td>
<td>274</td>
<td>162 (59.1)</td>
</tr>
<tr>
<td>50-59</td>
<td>324</td>
<td>197 (60.8)</td>
</tr>
<tr>
<td>60 &amp; above</td>
<td>382</td>
<td>237 (62.0)</td>
</tr>
<tr>
<td>Mean±SD</td>
<td></td>
<td>51.4±14.3</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hindu</td>
<td>839</td>
<td>515 (61.4)</td>
</tr>
<tr>
<td>Muslim</td>
<td>43</td>
<td>21 (48.8)</td>
</tr>
<tr>
<td>Sikh</td>
<td>233</td>
<td>148 (63.5)</td>
</tr>
<tr>
<td>Christian</td>
<td>02</td>
<td>01 (50.0)</td>
</tr>
<tr>
<td>Socio-economic status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>445</td>
<td>270 (60.7)</td>
</tr>
<tr>
<td>Middle</td>
<td>301</td>
<td>189 (62.8)</td>
</tr>
<tr>
<td>High</td>
<td>371</td>
<td>226 (60.9)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>946</td>
<td>563 (59.5)</td>
</tr>
<tr>
<td>Unmarried</td>
<td>62</td>
<td>40 (64.5)</td>
</tr>
<tr>
<td>Widow/Widower/Divorcee</td>
<td>109</td>
<td>82 (75.9)</td>
</tr>
<tr>
<td>Type of family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joint</td>
<td>662</td>
<td>367 (55.4)</td>
</tr>
<tr>
<td>Nuclear/ Extended</td>
<td>455</td>
<td>318 (70.0)</td>
</tr>
<tr>
<td>Dietary habit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetarian</td>
<td>672</td>
<td>425 (63.2)</td>
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<tr>
<td>Non-Vegetarian</td>
<td>445</td>
<td>260 (58.4)</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
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<tr>
<td>Housewife</td>
<td>323</td>
<td>323 (63.0)</td>
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<tr>
<td>Unemployed</td>
<td>122</td>
<td>89 (73.0)</td>
</tr>
<tr>
<td>Service</td>
<td>109</td>
<td>64 (58.7)</td>
</tr>
<tr>
<td>Business</td>
<td>35</td>
<td>18 (51.4)</td>
</tr>
<tr>
<td>Laborer</td>
<td>124</td>
<td>70 (56.5)</td>
</tr>
<tr>
<td>Skilled Worker</td>
<td>40</td>
<td>26 (65.0)</td>
</tr>
<tr>
<td>Agriculture</td>
<td>91</td>
<td>52 (57.1)</td>
</tr>
<tr>
<td>Any Other</td>
<td>83</td>
<td>43 (51.8)</td>
</tr>
<tr>
<td>Social background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>721</td>
<td>440 (61.0)</td>
</tr>
<tr>
<td>Urban</td>
<td>396</td>
<td>245 (61.9)</td>
</tr>
<tr>
<td>Educational status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>387</td>
<td>236 (61.0)</td>
</tr>
<tr>
<td>Primary</td>
<td>206</td>
<td>129 (62.6)</td>
</tr>
<tr>
<td>Middle</td>
<td>178</td>
<td>121 (68.0)</td>
</tr>
<tr>
<td>High School</td>
<td>172</td>
<td>107 (62.2)</td>
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<tr>
<td>Intermediate</td>
<td>50</td>
<td>27 (54.0)</td>
</tr>
<tr>
<td>Graduate</td>
<td>64</td>
<td>33 (51.6)</td>
</tr>
<tr>
<td>Post Graduate</td>
<td>38</td>
<td>21 (55.3)</td>
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<tr>
<td>Engineer</td>
<td>04</td>
<td>01 (25.0)</td>
</tr>
<tr>
<td>Others</td>
<td>18</td>
<td>10 (55.6)</td>
</tr>
<tr>
<td>Family history of cancer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>163</td>
<td>94 (57.7)</td>
</tr>
<tr>
<td>No</td>
<td>954</td>
<td>591 (61.9)</td>
</tr>
<tr>
<td>$\chi^2 =1.1$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table -1 b): User Rates of CAM therapies according to the patient characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Base</th>
<th>CAM Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Awareness of patient suffering from cancer</td>
<td>1001</td>
<td>601(60.0) 400(40.0)</td>
</tr>
<tr>
<td>Yes</td>
<td>967</td>
<td>589(60.9) 378(39.1)</td>
</tr>
<tr>
<td>No</td>
<td>149</td>
<td>96(64.4) 53(35.6)</td>
</tr>
<tr>
<td>Satisfied with conventional therapy</td>
<td>24</td>
<td>18(75.0) 6(25.0)</td>
</tr>
<tr>
<td>Yes</td>
<td>1001</td>
<td>601(60.0) 400(40.0)</td>
</tr>
<tr>
<td>No</td>
<td>27</td>
<td>18(66.7) 9(33.3)</td>
</tr>
<tr>
<td>Site of cancer</td>
<td>12</td>
<td>7(58.3) 5(41.7)</td>
</tr>
<tr>
<td>Brain cancer</td>
<td>12</td>
<td>7(58.3) 5(41.7)</td>
</tr>
<tr>
<td>Breast cancer</td>
<td>204</td>
<td>120(59.0) 84(41.0)</td>
</tr>
<tr>
<td>Oral cancer</td>
<td>53</td>
<td>32(60.4) 21(39.6)</td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>102</td>
<td>72(70.6) 30(29.4)</td>
</tr>
<tr>
<td>Head &amp; neck cancer</td>
<td>114</td>
<td>71(62.3) 43(37.7)</td>
</tr>
<tr>
<td>GIT</td>
<td>16</td>
<td>12(75.0) 4(25.0)</td>
</tr>
<tr>
<td>Prostate cancer</td>
<td>16</td>
<td>7(43.8) 9(56.2)</td>
</tr>
<tr>
<td>Others</td>
<td>600</td>
<td>362(60.3) 238(39.7)</td>
</tr>
<tr>
<td>Allopathic Therapy Received(N=140)</td>
<td>571</td>
<td>349(61.6) 222(38.4)</td>
</tr>
<tr>
<td>Radiation Therapy only</td>
<td>711</td>
<td>422(59.4) 289(40.6)</td>
</tr>
<tr>
<td>Chemotherapy only</td>
<td>450</td>
<td>277(61.6) 173(38.4)</td>
</tr>
<tr>
<td>Surgery only</td>
<td>46</td>
<td>33(71.7) 13(28.3)</td>
</tr>
<tr>
<td>Others</td>
<td>600</td>
<td>362(60.3) 238(39.7)</td>
</tr>
</tbody>
</table>

Table -2: Distribution of cases by staging of cancer and gender (N=1117)

<table>
<thead>
<tr>
<th>Stage of the disease at diagnosis</th>
<th>Male (N=501)</th>
<th>Female (N=616)</th>
<th>Total (N=1117)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>2 (0.4)</td>
<td>3 (0.5)</td>
<td>5 (0.4)</td>
</tr>
<tr>
<td>1B</td>
<td>1 (0.2)</td>
<td>6 (1.0)</td>
<td>7 (0.6)</td>
</tr>
<tr>
<td>1B2</td>
<td>0 (0)</td>
<td>1 (0.2)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>1C</td>
<td>0 (0)</td>
<td>5 (0.8)</td>
<td>5 (0.4)</td>
</tr>
<tr>
<td>1+(a)</td>
<td>71 (14.2)</td>
<td>92 (14.9)</td>
<td>163 (14.6)</td>
</tr>
<tr>
<td>2A</td>
<td>5 (1)</td>
<td>12 (1.9)</td>
<td>17 (1.5)</td>
</tr>
<tr>
<td>2B</td>
<td>5 (1)</td>
<td>27 (4.4)</td>
<td>32 (2.9)</td>
</tr>
<tr>
<td>2C</td>
<td>1 (0.2)</td>
<td>1 (0.2)</td>
<td>2 (0.2)</td>
</tr>
<tr>
<td>2+(b)</td>
<td>85 (16.6)</td>
<td>102 (16.6)</td>
<td>187 (16.6)</td>
</tr>
<tr>
<td>3A</td>
<td>5 (1)</td>
<td>7 (1.1)</td>
<td>12 (1.1)</td>
</tr>
<tr>
<td>3B</td>
<td>5 (1)</td>
<td>39 (6.3)</td>
<td>44 (3.9)</td>
</tr>
<tr>
<td>3C</td>
<td>0 (0)</td>
<td>1 (0.2)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>3D</td>
<td>1 (0.2)</td>
<td>0 (0)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>3+(c)</td>
<td>126 (25.1)</td>
<td>100 (16.2)</td>
<td>226 (20.2)</td>
</tr>
<tr>
<td>4A</td>
<td>7 (1.4)</td>
<td>4 (0.6)</td>
<td>11 (1)</td>
</tr>
<tr>
<td>4B</td>
<td>5 (1)</td>
<td>2 (0.3)</td>
<td>7 (0.6)</td>
</tr>
<tr>
<td>4+(d)</td>
<td>95 (19)</td>
<td>82 (13.3)</td>
<td>177 (15.8)</td>
</tr>
<tr>
<td>Advanced</td>
<td>2 (0.4)</td>
<td>0 (0)</td>
<td>2 (0.2)</td>
</tr>
<tr>
<td>T1N0M0</td>
<td>1 (0.2)</td>
<td>0 (0)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>T1N2Mx</td>
<td>0 (0)</td>
<td>1 (0.2)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>T2N0M0</td>
<td>1 (0.2)</td>
<td>0 (0)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>T2N1Mx</td>
<td>0 (0)</td>
<td>1 (0.2)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>T3M2M0</td>
<td>1 (0.2)</td>
<td>0 (0)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>T3N0M0</td>
<td>3 (0.6)</td>
<td>2 (0.3)</td>
<td>5 (0.4)</td>
</tr>
<tr>
<td>T3N0Mx</td>
<td>0 (0)</td>
<td>1 (0.2)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>T3N2Mx</td>
<td>2 (0.4)</td>
<td>0 (0)</td>
<td>2 (0.2)</td>
</tr>
<tr>
<td>T4N0M0</td>
<td>0 (0)</td>
<td>1 (0.2)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>T4N1M0</td>
<td>0 (0)</td>
<td>1 (0.2)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>T4N2Mx</td>
<td>1 (0.2)</td>
<td>0 (0)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>T4NxM1</td>
<td>0 (0)</td>
<td>1 (0.2)</td>
<td>1 (0.1)</td>
</tr>
</tbody>
</table>

Respondents who were not of Hindu religion were found to be at significantly higher risk of CAM use (P< 0.03) on the basis of logistic regression analysis. Whereas, CAM use among cancer patients was not influenced by factors like Age, Socio Economic Status, Social Background, Dietary habits, Marital status, Type of family, Literacy status and Family history of disease etc. CAM use was found prevalent irrespective of these Socio-Demographic characteristics of patients (Table -3).

The sources of awareness regarding Ayurvedic therapy included relatives/family members: 154(16.2%), friends: 91(9.5%) and doctors: 45(4.7%). There were 205(18.9%) respondents who were aware of Unani treatment. Only 34(3.1%) were aware of Siddha treatment. Also, 825(76.3%) respondents were aware of homeopathic treatment and reported source of awareness included doctors: 91(11.0%), relatives/ family members: 87 (10.5%). There were 246 (22.7%) respondents who were aware of naturopathy/herbal treatment, 242 (22.4%) respondents who were aware of acupuncture. Awareness of spiritual therapy was found among 462 (42.7%). Among all 1117 surveyed patients, 432 (38.7%) patients including 197 (39.3%) among males and 235 (38.1%) among females were using different CAM therapies. CAM users were asked regarding relief felt after CAM use. Among all users, 109 (25.2%) felt no relief and remaining 323 (74.8%) reported feeling of some relief. There were 109(25.2%) respondents didn’t felt any type of relief with these therapies (Table -4).

Reasons of using CAM therapies reported by users were mainly advice of family members or friends (23.1%) followed by self desire (16.7%), whereas, by 60.0% patients no reason of CAM use could be specified. About 72% patients reported that they were not having any prior knowledge of CAM therapies which they used. Only in about 23% cases, CAM therapies were provided by professional practitioners or their staff and in majority of cases the providers were not specified by respondents (Table -5). CAM users were asked to give their views on comparison of CAM with allopathic treatment. Among all 432 users, 162 (37.5%) patients were of the opinion that allopathy was better than use of CAM. Only 77 (17.8%) patients reported to have faith in CAM therapies. Considerable numbers of patients having faith have not specified the therapy (Table -6).

DISCUSSION

The present study concluded that there was high degree of awareness and practice of CAM among cancer patients irrespective of their socio demographic characteristics, type of cancer, etc. Overall CAM use was found to be 38.7%. The prevalence of CAM use was lower than that reported in the U.S. (53.7%) or Australia (64%) and Japan (44.6%).

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Table -3: Logistic Regression analysis of risk factors of CAM use:

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Regression Coefficient (β)</th>
<th>Odds Ratio Exp (β)</th>
<th>95% CI for Odds Ratio</th>
<th>P- Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (above 49 years)</td>
<td>-0.46</td>
<td>0.95</td>
<td>0.43 2.11</td>
<td>0.91</td>
</tr>
<tr>
<td>Low SES</td>
<td>-0.57</td>
<td>0.57</td>
<td>0.27 1.20</td>
<td>0.14</td>
</tr>
<tr>
<td>Gender (Male)</td>
<td>0.33</td>
<td>1.38</td>
<td>0.61 3.14</td>
<td>0.43</td>
</tr>
<tr>
<td>Background (rural/slam)</td>
<td>0.08</td>
<td>1.08</td>
<td>0.49 2.39</td>
<td>0.84</td>
</tr>
<tr>
<td>Religion (Hindu)</td>
<td>-1.12</td>
<td>0.32</td>
<td>0.12 0.89</td>
<td>0.03</td>
</tr>
<tr>
<td>Marital Status (Married)</td>
<td>-0.40</td>
<td>0.67</td>
<td>0.24 1.89</td>
<td>0.45</td>
</tr>
<tr>
<td>Dietary Habit (Veg.)</td>
<td>0.09</td>
<td>1.09</td>
<td>0.52 2.29</td>
<td>0.80</td>
</tr>
<tr>
<td>Type of family (joint)</td>
<td>0.24</td>
<td>1.27</td>
<td>0.58 2.75</td>
<td>0.55</td>
</tr>
<tr>
<td>Literacy (iliterate)</td>
<td>-0.31</td>
<td>0.73</td>
<td>0.34 1.58</td>
<td>0.43</td>
</tr>
<tr>
<td>Having family history of cancer</td>
<td>0.28</td>
<td>1.32</td>
<td>0.49 3.56</td>
<td>0.54</td>
</tr>
<tr>
<td>Constant</td>
<td>1.21</td>
<td>3.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table-4 (a): Respondents by source of awareness of different CAM therapies

<table>
<thead>
<tr>
<th>CAM therapy and source</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ayurvedic treatment (N= 952)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>154 (16.2)</td>
</tr>
<tr>
<td>Doctors</td>
<td>45 (4.7)</td>
</tr>
<tr>
<td>Friend</td>
<td>91 (9.5)</td>
</tr>
<tr>
<td>Any other</td>
<td>662 (69.5)</td>
</tr>
<tr>
<td>Unani (N=205)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>16 (7.8)</td>
</tr>
<tr>
<td>Doctors</td>
<td>14 (6.8)</td>
</tr>
<tr>
<td>Friend</td>
<td>23 (11.2)</td>
</tr>
<tr>
<td>Any other</td>
<td>152 (74.1)</td>
</tr>
<tr>
<td>Siddha treatment (N =34)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>1 (2.9)</td>
</tr>
<tr>
<td>Doctors</td>
<td>2 (5.9)</td>
</tr>
<tr>
<td>Friend</td>
<td>1 (2.9)</td>
</tr>
<tr>
<td>Any other</td>
<td>30 (88.2)</td>
</tr>
<tr>
<td>Homeopathic treatment (N=825)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>87 (10.5)</td>
</tr>
<tr>
<td>Doctors</td>
<td>91 (11)</td>
</tr>
<tr>
<td>Friend</td>
<td>77 (9.3)</td>
</tr>
<tr>
<td>Any other</td>
<td>570 (69.1)</td>
</tr>
<tr>
<td>Naturopathy/ herbal treatment (N=246)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>25 (10.2)</td>
</tr>
<tr>
<td>Doctors</td>
<td>8 (3.3)</td>
</tr>
<tr>
<td>Friend</td>
<td>31 (12.6)</td>
</tr>
<tr>
<td>Any other</td>
<td>182 (74)</td>
</tr>
<tr>
<td>Acupuncture/ acupressure (N=242)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>19 (7.9)</td>
</tr>
<tr>
<td>Doctors</td>
<td>13 (5.4)</td>
</tr>
<tr>
<td>Friend</td>
<td>33 (13.6)</td>
</tr>
<tr>
<td>Any other</td>
<td>177 (73.1)</td>
</tr>
<tr>
<td>Psychological therapy/ counseling (N=98)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Doctors</td>
<td>9 (9.2)</td>
</tr>
<tr>
<td>Friend</td>
<td>8 (8.2)</td>
</tr>
<tr>
<td>Any other</td>
<td>79 (80.6)</td>
</tr>
<tr>
<td>Spiritual therapy/prayer &amp; faith healing (N=462)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>45 (9.7)</td>
</tr>
<tr>
<td>Doctors</td>
<td>4 (0.9)</td>
</tr>
<tr>
<td>Friend</td>
<td>32 (6.9)</td>
</tr>
<tr>
<td>Any other</td>
<td>381 (82.5)</td>
</tr>
<tr>
<td>Laughter therapy (N=345)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>8 (2.3)</td>
</tr>
<tr>
<td>Doctors</td>
<td>13 (3.8)</td>
</tr>
<tr>
<td>Friend</td>
<td>17 (4.9)</td>
</tr>
<tr>
<td>Any other</td>
<td>307 (89)</td>
</tr>
<tr>
<td>Physiotherapy (N=124)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>16 (12.9)</td>
</tr>
<tr>
<td>Doctors</td>
<td>29 (23.4)</td>
</tr>
<tr>
<td>Friend</td>
<td>7 (5.6)</td>
</tr>
<tr>
<td>Any other</td>
<td>72 (58.1)</td>
</tr>
</tbody>
</table>

With regard to CAM use pattern in the Asian countries very few studies are available but prevalence seems to be higher than the western countries. The prevalence of CAM use ranged from 54% to 61% in Turkey, 64% in Malaysia and 93.4% in China. This higher usage could be due to different definitions of CAM, differences in the size and nature of the study population and different geographic settings.

In this study, sources of information reported by cancer patients about CAM were diversified included family members, friends/relatives, health care providers Moschen et al., reported the similar findings to this study, patients commonly received information from family members or friends who are usually involved in the decisions to make dietary changes or CAM use.

CAM use among Cancer patients were not influenced by factors like age, gender, socio economic status, social background, dietary habits, Religion, marital status, type of family, literacy status and family history of disease etc. in the present study. There were more males (39.3%) than females (38.2%) among the CAM users. The use of CAM was not affected by age, marital status, and level of education, religious affiliation, or socioeconomic status. However the level of education found to be significantly influence the use of CAM among cancer patients in the study in Malaysia. The type of CAM therapies vary, depending on age, level of income, level of education, and perceived cause and prognosis of the disease. The use of CAM in industrialized nations is more common among females; young adults/middle aged individuals, members of higher socioeconomic classes, and persons with higher levels of education.

The present study rejected the usual assumption that CAM therapies are inexpensive. The cost of the therapy was within the reach of many cancer patients belonging to the underprivileged segment of the society, contributing to its immense popularity in Kolkata.
Table-4 (b): Respondents by source of awareness of different CAM therapies:

<table>
<thead>
<tr>
<th>CAM therapy and source</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yoga/Meditation (N=966)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>50 (5.2)</td>
</tr>
<tr>
<td>Doctors</td>
<td>14 (1.4)</td>
</tr>
<tr>
<td>Friend</td>
<td>23 (2.4)</td>
</tr>
<tr>
<td>Any other</td>
<td>879 (91)</td>
</tr>
<tr>
<td>Any other (Specify) (N=78)</td>
<td></td>
</tr>
<tr>
<td>Relative/family member</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>Doctors</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Friend</td>
<td>6 (7.7)</td>
</tr>
<tr>
<td>Any other</td>
<td>70 (89.7)</td>
</tr>
<tr>
<td>Any prior knowledge about the treatment therapies adopted (N=432)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>122 (28.2)</td>
</tr>
<tr>
<td>No</td>
<td>310 (71.8)</td>
</tr>
<tr>
<td>CAM use (N=1117)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>432 (38.7)</td>
</tr>
<tr>
<td>No</td>
<td>685 (61.3)</td>
</tr>
<tr>
<td>Relief felt after using any CAM therapy (N=432)</td>
<td></td>
</tr>
<tr>
<td>No relief</td>
<td>109 (25.2)</td>
</tr>
<tr>
<td>Gives relaxation to mind</td>
<td>4 (0.9)</td>
</tr>
<tr>
<td>Improve physical health</td>
<td>2 (0.5)</td>
</tr>
<tr>
<td>Felt relief</td>
<td>15 (3.5)</td>
</tr>
</tbody>
</table>

Table- 5: Gender wise respondents by perceived reason of CAM use and source of CAM therapy:

<table>
<thead>
<tr>
<th>Reason for using CAM (N=432)</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>On advice of family or friends</td>
<td>52 (26.4)</td>
<td>48 (20.4)</td>
<td>100 (23.1)</td>
</tr>
<tr>
<td>Self desire</td>
<td>37 (18.8)</td>
<td>35 (14.9)</td>
<td>72 (16.7)</td>
</tr>
<tr>
<td>Recommended by a physician</td>
<td>0 (0)</td>
<td>1 (0.4)</td>
<td>1 (0.2)</td>
</tr>
<tr>
<td>Any other</td>
<td>108 (54.8)</td>
<td>151 (64.3)</td>
<td>259 (60)</td>
</tr>
<tr>
<td>Complementary therapy provided by (N=432)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Practitioners (GP)</td>
<td>16 (8.1)</td>
<td>8 (3.4)</td>
<td>24 (5.6)</td>
</tr>
<tr>
<td>Health staff</td>
<td>32 (16.2)</td>
<td>21 (8.9)</td>
<td>53 (12.3)</td>
</tr>
<tr>
<td>Private professional therapist</td>
<td>6 (3)</td>
<td>13 (5.5)</td>
<td>19 (4.4)</td>
</tr>
<tr>
<td>Private professional clinic</td>
<td>2 (1)</td>
<td>4 (1.7)</td>
<td>6 (1.4)</td>
</tr>
<tr>
<td>Private Non-professional</td>
<td>15 (7.6)</td>
<td>6 (2.6)</td>
<td>21 (4.9)</td>
</tr>
<tr>
<td>Professional therapists</td>
<td>3 (1.5)</td>
<td>0 (0)</td>
<td>3 (0.7)</td>
</tr>
<tr>
<td>Any Other (Specify)</td>
<td>123 (62.4)</td>
<td>183 (77.9)</td>
<td>306 (70.8)</td>
</tr>
</tbody>
</table>

Table-6: Opinion of CAM users regarding allopathic treatment and CAM therapies (N=432)

<table>
<thead>
<tr>
<th>Comparison of CAM with the allopathic treatment (N=432)</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allopathic is better than CAM</td>
<td>162 (37.5)</td>
</tr>
<tr>
<td>No Relief / Not effective</td>
<td>29 (6.7)</td>
</tr>
<tr>
<td>CAM gives good relief</td>
<td>10 (2.3)</td>
</tr>
<tr>
<td>CAM causes side effects</td>
<td>10 (2.3)</td>
</tr>
<tr>
<td>Both medicines are equally effective</td>
<td>10 (2.3)</td>
</tr>
<tr>
<td>CAM takes long time to relief</td>
<td>19 (4.4)</td>
</tr>
<tr>
<td>Mostly CAM doctors are fake</td>
<td>2 (0.5)</td>
</tr>
<tr>
<td>CAM is not acceptable by family members</td>
<td>4 (0.9)</td>
</tr>
<tr>
<td>Hard to manage</td>
<td>1 (0.2)</td>
</tr>
<tr>
<td>CAM works from roots</td>
<td>2 (0.5)</td>
</tr>
<tr>
<td>CAM Gives hope for life</td>
<td>1 (0.2)</td>
</tr>
<tr>
<td>CAM makes our mind strong</td>
<td>2 (0.5)</td>
</tr>
<tr>
<td>Allopathic medicines are very heavy doses</td>
<td>1 (0.2)</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2 (0.5)</td>
</tr>
<tr>
<td>Faith in any of the above therapies</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>77 (17.8)</td>
</tr>
<tr>
<td>No</td>
<td>331 (76.6)</td>
</tr>
<tr>
<td>No Response</td>
<td>24 (5.6)</td>
</tr>
</tbody>
</table>

A study conducted in Ontario, Canada, compared the characteristics of CAM users and CAM nonusers concluded that the exact reasons for the popularity of CAM are complex, varying with time, space and also from therapy to therapy which is in agreement with present study20.

The main weakness of present study is that it is a hospital based survey; thereby excluding patients who have abandoned conventional treatment completely or never used it at all. Moreover, it does not represent CAM use in the community.

CONCLUSIONS AND SUGGESTIONS

The high utilization of CAM among cancer patients and nondisclosure proportions suggests prioritizing research investigating reasons to use CAM and efficacy / safety of CAM use. There is an urgent need of conducting further in depth epidemiological studies to evaluate the efficacy of various CAM therapies in use for cancer with active participation from CAM providers/healers to attain some logical conclusions. Need for holistic approach for care of cancer patients in Indian set-up should also be considered due to deep rooted faith in some alternative therapies.

Compliance with Ethical Standards: The study has maintained its compliance with the Ethical Standards.

Funding: This study was not funded by any grant.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

REFERENCES


Prevalence of Depression among Hypertensive Patients Attending a Rural Health Centre in Kanyakumari

Vishnu G Ashok¹, Sayujya S Ghosh²

ABSTRACT

Background: Hypertension is a non-communicable disease leading to chronic morbidities and is found to have higher chance of suffering from depression. Hypertensive patients with co-morbid depression lead to lack of adherence to treatment, lost to follow up and poor compliance to lifestyle modification. Therefore it is very important to assess prevalence of depression among hypertensives.

Objectives: To study the prevalence of depression among hypertensive patients and its associates factors.

Methodology: A cross-sectional study was done among 200 hypertensives attending the RHC, Marapaddi, Kanayakumari during November 2017 to February 2018. Depression was assessed using a self reported and previously validated PHQ-9 questionnaire. Data was analysed using statistical software SPSS.

Results: Out of the 200 patients, 65% were women and 35% were men. 41% had depression, of which 28.5% had mild depression, 7% had moderate depression, 3% had moderately severe depression and 2.5% suffer from severe depression. Some factors like female gender, low socio economic status, positive family history were found to be significantly associated with depression (p<0.05).

Conclusion: The study results show that there is high prevalence of depression among hypertensives. The early detection and prompt treatment with life style modifications can prevent depression among hypertensives.

Keywords: Hypertensive patients, depression, prevalence

INTRODUCTION

Depression and hypertension are the most common chronic diseases globally. The prevalence of depression is more common among patients with chronic illness like hypertension, diabetes mellitus, cardiovascular diseases¹, ². Both of hypertension and depression show a bidirectional relationship, in which hypertension increases the vulnerability of developing depression while depression as such increases the risk and severity of hypertension³. This relationship results in a continuous cycle of physical health and poor mental status. In many epidemiological studies shows increasing evidences that depressive symptoms and major depression are associated with increased morbidity and mortality from illnesses such as diabetes and heart diseases⁴, ⁵.

According to World Health Organization (WHO) survey performed in 17 countries reported that one person out of every 20 people had a depressive episode⁶. All around the world about 350 million people were affected by depression and it possesses a lifetime risk of about 7%⁷. Depression is expected to be one of the leading causes of disability by 2030 globally. It is most likely to cause an increase of 5.7% in the global burden of disease by 2020⁸, ⁹.

Hypertension is one among the leading causes of mortality and disability worldwide. According to a study done in 2010 it was reported that one fourth
of the adult population were diagnosed with hypertension and the proportion may increase to one third of the adult population. Hypertensive patients with co-morbid depression lead to lack of adherence to treatment, lost to follow up and poor compliance to lifestyle modification. Therefore it is very important to assess prevalence of depression among hypertensives.

OBJECTIVES

The study was conducted to find out the prevalence of depression among hypertensive patients attending the rural health care centre and also to study the factors associated with depression among hypertensive patients.

MATERIAL AND METHODS

The study was a cross sectional study done during November 2017 to February 2018. The study was done among patients more than 18 years of age who were diagnosed with hypertension for at least one year attending the rural health centre Marapaddi. The sample size was estimated calculated by the formula \( p = \frac{4pq}{l^2} \) with a prevalence of 34% \( l \), a precision of 5% and with an allowable error \( l \) of 20% and the sample size came to be 194 and rounded off to 200.

The variables studied in this study were Sociodemographic variables, history of hypertension, family history of hypertension, its duration, on treatment, comorbidities. Patients who have been diagnosed with pregnancy, renal diseases, cancer, dementia, depression and psychotic diseases were excluded from the study. Diagnosed hypertensive patients who are on regular treatment and patients who are giving consent were included in the study. Newly diagnosed hypertensive, mentally challenged, terminal illness patients were excluded from the study. The Blood pressure was measured twice for a person on the right arm 5 minutes apart, and the average value was taken as the BP of the person and expressed in terms of mm of mercury using sphygmomanometer.

Depression was assessed using a self reported and previously validated questionnaire Patient Health Questionnaire – 9 (PHQ-9) Tamil version. PHQ-9 is a 9 item questionnaire with score ranging from 0 to 27. This score is divided into 5 category where score of 0 - 4 represent no depression, score of 5 – 9 represent mild depression, score of 10-14 represent moderate depression, score of 15-19 represent moderately severe depression and a score of more than 20 represent severe depression. The stage or degrees of hypertension was classified according to Joint National Committee On Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC-7) Percentages and proportions were calculated. Data was analysed statistical software SPSS. In order to minimize recall bias questions concerning daily habits as well as depressive symptoms not more than two weeks prior are included. The cut off score of more than or equal to 6 was taken as Stafford et al reported that it has optimized sensitivity (83%) and specificity (79%) among CAD patients.

The data was analysed using Statistical package for Social Sciences (SPSS) Software. Descriptive statistics and frequencies for each variable were calculated and represented as percentages. Statistical tests were done to find the association between all the variables with the state of depression (depressed or not depressed). A p value of < 0.05 was considered to be significant. Chi-square test was used for bivariate analysis.

RESULTS

The study included two hundred adult patients above the age of 18 years diagnosed with hypertension attending rural health center Marapaddi, Kanayakumari. Out of the 200 patients 130(65%) of them were women and 70(35%) of them were men. The Mean age of the patients was 66.1±8.62. Most of them belong to the age group of more than 65 years of age, 131 (65.5%) and 121(60.5%) of them are married and living with spouse. 156(78%) of them have no physical activity and 139 (69.5%) of them have co morbidities & DM was the highest 89 (44.5%).

Depression was classified by using the cut off score of depression of more than or equal to 5. Out of the total 200 patients 82(41%) of them had depression. Out of the 82 patients 57(28.5%) had mild depression, 14(7%) had moderate depression, 6 (3%) had moderately severe depression and 5(2.5%) suffer from severe depression. The prevalence and percentage distribution of depression in each category is shown in Table 1 and Figure 1.

<table>
<thead>
<tr>
<th>Depression</th>
<th>Participants (n) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No depression</td>
<td>118 (59)</td>
</tr>
<tr>
<td>Mild depression</td>
<td>57 (28.5)</td>
</tr>
<tr>
<td>Moderate depression</td>
<td>14 (7)</td>
</tr>
<tr>
<td>Moderately severe depression</td>
<td>6 (3)</td>
</tr>
<tr>
<td>Severe depression</td>
<td>5 (2.5)</td>
</tr>
<tr>
<td>Total</td>
<td>200 (100)</td>
</tr>
</tbody>
</table>

Table 1: Prevalence of depression among the study subjects, N=200.
Bivariate analysis was used to assess the factors associated with depression. The factors showed significant association along with the measure of risk is shown in the Table 2. Factors like female gender, low socio economic status, positive family history, uncontrolled of blood pressure, not taking medication and presence of comorbidities were found to be significantly associated with depression (p<0.05). Whereas age less than or equal to 65 years, living with spouse and duration of hypertension less than or equal to 6 years were found to be protective. In binary logistic regression the factors that were found to be associated with depression were positive family history, duration of hypertension less than or equal to 6 years and presence of comorbidities (p<0.05).

Table 2: Factors found significantly associated with depression among the study subject

<table>
<thead>
<tr>
<th>Factors</th>
<th>Depressive (n=82) (%)</th>
<th>Non depressive (n=118) (%)</th>
<th>p value</th>
<th>OR (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 65 years</td>
<td>20 (29)</td>
<td>49 (71)</td>
<td>0.012</td>
<td>0.454 (0.244-0.847)</td>
</tr>
<tr>
<td>&gt;65 years</td>
<td>62 (47.3)</td>
<td>69 (52.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>61 (46.9)</td>
<td>69 (53.1)</td>
<td>0.020</td>
<td>2.063 (1.114-3.821)</td>
</tr>
<tr>
<td>Males</td>
<td>21 (30.0)</td>
<td>49 (70.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living with spouse</td>
<td>37 (32.7)</td>
<td>76 (67.3)</td>
<td>0.002</td>
<td>0.459 (0.256-0.805)</td>
</tr>
<tr>
<td>Single</td>
<td>45 (37.7)</td>
<td>42 (48.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPL</td>
<td>61 (50.4)</td>
<td>60 (49.6)</td>
<td>&lt;0.001</td>
<td>2.808 (1.521-5.185)</td>
</tr>
<tr>
<td>APL</td>
<td>21(26.6)</td>
<td>58 (73.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family history</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>61 (52.5)</td>
<td>53 (46.5)</td>
<td>&lt;0.001</td>
<td>3.562 (1.972-6.585)</td>
</tr>
<tr>
<td>Absent</td>
<td>21 (24.4)</td>
<td>65 (75.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncontrolled</td>
<td>53 (60.2)</td>
<td>35 (39.8)</td>
<td>&lt;0.001</td>
<td>4.334 (2.377-7.904)</td>
</tr>
<tr>
<td>Controlled</td>
<td>29 (25.9)</td>
<td>83 (74.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of BP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 6 years</td>
<td>14 (11.3)</td>
<td>110 (88.7)</td>
<td>&lt;0.001</td>
<td>0.015 (0.006-0.038)</td>
</tr>
<tr>
<td>&gt; 6 years</td>
<td>68 (89.5)</td>
<td>8 (10.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On Medication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>37 (61.7)</td>
<td>23 (38.3)</td>
<td>&lt;0.001</td>
<td>3.396 (1.809-6.375)</td>
</tr>
<tr>
<td>Yes</td>
<td>45 (32.1)</td>
<td>95 (67.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-morbidities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>67 (48.2)</td>
<td>72 (51.8)</td>
<td>0.002</td>
<td>2.854 (1.454-5.583)</td>
</tr>
<tr>
<td>Absent</td>
<td>15 (24.6)</td>
<td>46 (75.4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

In the present study was a cross sectional study done among 200 subjects and the depression was assessed using the PHQ-9 questionnaire and the prevalence of depression among hypertensives were found to be 41%. A similar study was done by Prathibha et al in trivandrum10 and reported that the prevalence of depression among hypertensives to be 33.3%. In another similar study done by Kosana et al14 in Bosnia and Herzegovina and the prevalence was found to be 46%. The prevalence of depression among hypertensives in the present study is comparable with the rest of the studies. Li et al9 done a a systematic review and meta-analysis with 41 studies on the similar topic and summarized the prevalence of depression among hypertensive to be 26.8% with a range of 21.7-32.3%. They also concluded that the heterogeneity in values is mainly due to the difference in the method of evaluation.

On bivariate analysis, female gender was associated with depression among hypertensives. The risk of female gender for the development of depression was 2.063(OR). According to WHO facts on gender and health, it also emphasised that depression is twice common in females when compared to males15. In other similar studies done in Trivandrum(Kerala)10, Kashmir16 and in a western community17 also reported similar finding with prevalence of depression in females significantly higher than that of males.

Other factors like age, marital status, socio economic status, family history, uncontrolled Blood pressure, duration of hypertension, taking medication and presence of comorbidities were also found to be significantly associated with depression (p<0.05). Married and living with spouse is found to have a protective effect than living single. A study done by Prathibha et al in Trivandrum10, Bulloch et al18, Akhtar et al17, Kessler et al19 also reported the same. In the present study physical ac-
tivity does not have any significant association with depression among hypertensives. Unlike the present study Prathibha et al\textsuperscript{10} and Yates et al\textsuperscript{20} study physical activity is found to be a protective factor against depression among hypertensives. In Prathibha et al\textsuperscript{10} and Rubio Guerra et al\textsuperscript{21} reported in their studies that poor blood pressure control was a risk factor for depression among hypertensives.

The study had few limitations like firstly, the study design is a cross sectional study thus the risk factors found out may be further tested using case control study. Secondly, the presence of depression was assessed by a questionnaire based screening tool rather than diagnosed by a psychiatrist. Thirdly, self-reported symptoms may have been vulnerable to socio cultural factors and recall bias.

CONCLUSION

In the present study we conclude that there was a high prevalence of depression among hypertensives which is more than the general population. The factors like female gender, low socio economic status, positive family history, uncontrolled of blood pressure, not taking medication and presence of comorbidities were found to be significantly associated with depression. The early detection and prompt treatment with life style modifications can prevent depression among hypertensives.

REFERENCES

Epidemiological Trends and Clinical Manifestations of Dengue Cases Admitted in a Tertiary Care Hospital, Sullia, Karnataka

Dinesh P Vasu¹, Sandhya Gopi², Annarao G Kulkarni³

ABSTRACT

Background: Dengue is an important public health issue worldwide. There is an increase in number of cases recently and it is considered to be associated with climatic conditions. The present work was done to study the epidemiological trends in dengue and its clinical manifestations.

Materials and Methods: The study was conducted in a tertiary care teaching hospital in rural part of South Canara district of Karnataka. The data was collected using a semi structured pretested questionnaire from January 2016 to December 2018 and presented as frequencies and percentages.

Results: 31.10% of the total 1993 suspected samples processed were positive for dengue over a period of three years. Among the positive cases, there was a male preponderance and seen commonly in the 20-49 years age group. There was a positive relationship of the disease incidence with environmental factors. Fever was the most common complaint followed by myalgia and headache. Petechiae was the most common form of bleeding manifestation. More than 90% of the diagnosed cases belonged to dengue fever. ARDS was seen in 1.98% as a complication.

Conclusion: Dengue cases are on a rise and are associated with climatic conditions. Continuous surveillance of the cases and mosquito control measures are essential to control this vector borne disease.

Key Words: Dengue, Epidemiological trends, Clinical Manifestations

BACKGROUND

Dengue, an important arthropod borne disease transmitted by Aedes aegypti mosquito, is a major public health issue in India. This viral infection has grown 30 folds from the time it was initially reported. It has now expanded and diversified globally causing human sufferings and massive socio-economic losses. It is estimated that 50-100 million dengue cases occur globally each year and is also responsible for 20,000 annual deaths. The epidemiology of dengue was first reported in Chennai in 1780 and the first outbreak occurred in Kolkata in 1963, following which several outbreaks have been reported in various parts of India. In addition to the increased number of cases and severity of disease, there has also been a major change in the geographical range of the disease.

Since the mid 1990’s, the dengue epidemics have become more frequent in urban areas of India and it has now spread to new regions where it was actually non-existent. The rise in cases of dengue in India can be associated with unplanned urbanization, changes in ecological factors, changes in host – pathogen interaction and population immunological factors. Temperature and precipitation are important factors which are required to create and maintain breeding conditions for the survival of Aedes aegypti mosquitoes.
sites and consequently a strong determinant of vector distribution. People sometimes tend to store water in unprotected reservoirs near their households which attracts the anthropophilic mosquito thus increasing the risk of transmission.

Dengue disease has a seasonal pattern i.e., the cases peak after monsoon but in the southern states and states of western part of India, the transmission cases peak after monsoon but in the southern states. Dengue disease has a seasonal pattern i.e., the transmission cases peak after monsoon but in the southern states and states of western part of India, the transmission cases peak after monsoon but in the southern states.

In the first few days of illness, dengue patients present with fever and also with non specific signs and symptoms like headache, malaise, nausea, vomiting, abdominal pain and rash. Retroorbital pain and arthralgia are mostly found in Dengue fever (DF) patients. The bleeding manifestations may either be petechia which is the most common and other signs like epistaxis, gum bleeding, hematemesis, or melena may also be present. Identifying the cause of fever is usually a challenge to any physician and these signs and symptoms help in identifying the disease early which is sometimes missed by the treating physician in a busy outpatient or primary care unit.

The changes that have occurred with regards to magnitude of dengue and its distribution in a certain area will provide us essential data to the planning and implementation of services for the prevention, control and treatment of disease as well as setting priorities among the services. Thus the objective of this article was to study the epidemiological trends in dengue and its clinical manifestations among those who were diagnosed at this tertiary care centre.

The study area, Sullia taluk is situated in Dakshina Kannada district of Karnataka. The latitude / longitude coordinates for Sullia are: 12.5581° N, 75.3908° E surrounded by evergreen mountains of Western ghats range and is situated in the East of Mangalore on NH-275 with a total population of 1,45,227. The study area, Sullia taluk is situated in Dakshina Kannada district of Karnataka. The latitude / longitude coordinates for Sullia are: 12.5581° N, 75.3908° E surrounded by evergreen mountains of Western ghats range and is situated in the East of Mangalore on NH-275 with a total population of 1,45,227. The houses are in the midst of a plantation of coconut, arecanuts, rubber or a mixture of them.

The objective of this article was to study the epidemiological trends in dengue and its clinical manifestations among those who were diagnosed at this tertiary care centre.

Table 1: Year wise distribution of dengue cases

<table>
<thead>
<tr>
<th>Duration</th>
<th>Blood samples processed</th>
<th>Samples tested positive (%)</th>
<th>Positive samples Male (%)</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Positivity rate Male (%)</th>
<th>Female (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 2016 – Dec 2016</td>
<td>949</td>
<td>336 (35.40)</td>
<td>185 (55.05)</td>
<td>31.51</td>
<td>41.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan 2017 – Dec 2017</td>
<td>342</td>
<td>79 (23.09)</td>
<td>52 (65.82)</td>
<td>23.74</td>
<td>21.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan 2018 – Dec 2018</td>
<td>702</td>
<td>205 (29.20)</td>
<td>123 (60)</td>
<td>31.21</td>
<td>26.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1993</td>
<td>620 (31.10)</td>
<td>360 (58.06)</td>
<td>30</td>
<td>32.78</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The study was conducted in Sullia taluk of Karnataka between January 2016 and December 2018. A semi-structured pretested questionnaire was used to collect the data from all patients who tested positive for dengue. Demographic and clinical details of the patient having dengue were collected. Data regarding the climatic condition of Sullia was recorded for every month during the study period i.e., temperature, rainfall and humidity.

Patients with a positive NS1 antigen or positive IgM antibody or both positive were considered as a case of dengue. Due to lack of facility for genotypic study, serotypic classification could not be done.

Approval from the institutional ethical committee was obtained before the start of the study. Informed consent was taken in patient’s language prior to obtaining detailed history from each of them. Blood samples were collected as per the WHO guidelines. Blood samples thus collected were centrifuged at 1100 to 1300 rpm at room temperature. The serum was separated and was subjected to Dengue NS1, Dengue IgM antibody and Dengue IgG antibody ELISA (J. Mitra & Co. Pvt. Ltd.).

The data was then entered into Microsoft Office Excel 2007 and IBM SPSS version 17 was used for analysis. The observations are presented as frequencies and percentages.

RESULTS

Of the total 1993 blood samples processed for examination, 620 (31.10%) were positive for dengue. 58.06% of the positive samples were from males and 41.93% were from females as seen in Table 1. It can be seen that during the year 2016, there were 336 cases, which accounted for 54.19% of the total cases diagnosed during the three years. There was a decline in the cases in the year 2017 and again there was an increase in the number of cases in 2018 to 33.06%. In the year 2017, only 12.74% of the cases were seen in the hospital as seen in Figure 1.

Table 2 shows the age and gender distribution of the confirmed cases. Of the total 360 male cases diagnosed, the highest cases were in the age group of 20-49 years which accounted for 58.33% of the cases among males and 33.87% of all cases.
Table 2: Age and sex distribution of dengue cases

<table>
<thead>
<tr>
<th>Age distribution</th>
<th>Dengue positive cases</th>
<th>Positivity rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (%)</td>
<td>Female (%)</td>
</tr>
<tr>
<td>0 – 4 Years</td>
<td>6 (0.96)</td>
<td>5 (0.80)</td>
</tr>
<tr>
<td>5 – 9 Years</td>
<td>9 (1.45)</td>
<td>7 (1.12)</td>
</tr>
<tr>
<td>10 – 19 Years</td>
<td>43 (6.93)</td>
<td>37 (5.96)</td>
</tr>
<tr>
<td>20 – 29 Years</td>
<td>67 (10.80)</td>
<td>59 (9.51)</td>
</tr>
<tr>
<td>30 – 39 Years</td>
<td>69 (11.12)</td>
<td>57 (9.19)</td>
</tr>
<tr>
<td>40 – 49 Years</td>
<td>74 (11.93)</td>
<td>49 (7.90)</td>
</tr>
<tr>
<td>50 – 59 Years</td>
<td>47 (7.58)</td>
<td>24 (3.87)</td>
</tr>
<tr>
<td>60 – 69 Years</td>
<td>36 (5.80)</td>
<td>16 (2.58)</td>
</tr>
<tr>
<td>≥ 70 Years</td>
<td>6 (0.96)</td>
<td>5 (0.80)</td>
</tr>
<tr>
<td>Total</td>
<td>360 (58.06)</td>
<td>260 (41.93)</td>
</tr>
</tbody>
</table>

Of the 260 cases in females, the maximum number of cases was also in the 20-49 years age group which accounted for 63.46% of cases among females and 26.61% of all cases. There were only a few cases in the extremes of the age groups.

Figure 2 shows that the relationship of confirmed cases of dengue with the environmental factors. It was clearly seen that there was a relationship of dengue outbreak with rainfall. There was a gradual rise in number of cases from the end of May and the maximum number of cases reported during the months of July and August. There was a decline in the number of cases from the end of September.

Table 3 shows the geographical distribution of cases. It is evident that the maximum number of positive cases (35.69%) residing in Sullialuk were from urban part of Sullia. The maximum number of cases in rural area was from Aranthodu, Thodikana and Jalsoor villages which are in the periurban belt.

NS1 antigen was positive in 59.07% of the cases and 29.86% showed IgM positivity (Table 4). Fever was the most common complaint followed by myalgia and headache in 71.94% and 48.18% of the cases respectively. 46% of the cases had vomiting and 35.47% had abdominal pain. Among the bleeding manifestations, petechiae was the commonest which accounted for 20.79%. Other bleeding manifestations like gum bleeding, epistaxis and hematuria were seen in less than 3% of the population. ARDS was seen as a complication in 1.98% of the cases and pleural effusion in 1.65% of the cases. Less than 0.5% had renal failure or multiorgan failure as seen in Table 5.

More than 90% of the diagnosed cases were dengue fever as seen in Table 6. Very few cases presented as dengue hemorrhagic fever or dengue shock syndrome. Only 2 cases were reportedly confirmed to have died because of dengue over three years.

DISCUSSION

Dengue is an important emerging disease of the tropical and subtropical regions, transmitted by mosquitoes to humans. It is important because of both the morbidity pattern and mortality associated with it. Reappearance of dengue over the past few decades has made it an important public health issue globally.16

In the present study, out of 1993 suspected dengue cases, 620 cases were positive for dengue. The proportion of cases with dengue disease, thus accounted for 31.10%.
Table 3: Geographical distribution of dengue cases admitted in the hospital

<table>
<thead>
<tr>
<th>Area of residence</th>
<th>Cases in 2016</th>
<th>Cases in 2017</th>
<th>Cases in 2018</th>
<th>Total cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thodikana</td>
<td>33</td>
<td>0</td>
<td>5</td>
<td>38</td>
</tr>
<tr>
<td>Avernadu</td>
<td>0</td>
<td>1</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Amaramudnoor</td>
<td>3</td>
<td>2</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>Sullia town</td>
<td>116</td>
<td>9</td>
<td>36</td>
<td>161</td>
</tr>
<tr>
<td>Guthigaru</td>
<td>3</td>
<td>2</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>Jalsoor</td>
<td>6</td>
<td>7</td>
<td>15</td>
<td>28</td>
</tr>
<tr>
<td>Aranthodu</td>
<td>27</td>
<td>12</td>
<td>8</td>
<td>47</td>
</tr>
<tr>
<td>Markanja</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Aletti</td>
<td>7</td>
<td>1</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Bellare</td>
<td>0</td>
<td>3</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Ajavara</td>
<td>17</td>
<td>1</td>
<td>4</td>
<td>22</td>
</tr>
<tr>
<td>Peraje</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Devachalla</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Mandekolol</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Kallugundi</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Chembu</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Ubaradka</td>
<td>7</td>
<td>1</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Sonageri</td>
<td>6</td>
<td>0</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Kurunjibhag</td>
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<tr>
<td>Subramanya</td>
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</tr>
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<td>Nellurkembraje</td>
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<td>3</td>
</tr>
<tr>
<td>Madapady</td>
<td>0</td>
<td>0</td>
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<td>3</td>
</tr>
<tr>
<td>Kanakamajalu</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
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</tbody>
</table>

Patients from other areas of Karnataka and Adjacent Kerala

<table>
<thead>
<tr>
<th>Area of residence</th>
<th>Cases in 2016</th>
<th>Cases in 2017</th>
<th>Cases in 2018</th>
<th>Total cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Koynadu</td>
<td>21</td>
<td>0</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Sampoje</td>
<td>17</td>
<td>4</td>
<td>10</td>
<td>31</td>
</tr>
<tr>
<td>Puttur</td>
<td>6</td>
<td>1</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Madikeri</td>
<td>47</td>
<td>4</td>
<td>4</td>
<td>55</td>
</tr>
<tr>
<td>Somwarpet</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Virajpet</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Periyapatna</td>
<td>1</td>
<td>10</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Kushalnagara</td>
<td>0</td>
<td>7</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Hassan</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Somwarpet</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Kasaragod</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 4: Pattern of positivity among the Dengue cases

<table>
<thead>
<tr>
<th>Type of test</th>
<th>Dengue cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS1 TEST</td>
<td>358 (59.07%)</td>
</tr>
<tr>
<td>IgM</td>
<td>181 (29.86%)</td>
</tr>
</tbody>
</table>

Table 5: Symptoms and complications among those admitted with dengue

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>No. of cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>604 (99.66)</td>
</tr>
<tr>
<td>Myalgia</td>
<td>436 (71.94)</td>
</tr>
<tr>
<td>Headache</td>
<td>292 (48.18)</td>
</tr>
<tr>
<td>Vomiting</td>
<td>279 (46.03)</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>215 (35.47)</td>
</tr>
<tr>
<td>Skin rash / petechiae</td>
<td>126 (20.79)</td>
</tr>
<tr>
<td>Breathlessness</td>
<td>91 (15.01)</td>
</tr>
<tr>
<td>Altered sensorium</td>
<td>21 (3.46)</td>
</tr>
<tr>
<td>Gum bleeding</td>
<td>16 (2.64)</td>
</tr>
<tr>
<td>Hematuria</td>
<td>7 (1.15)</td>
</tr>
<tr>
<td>Epistaxis</td>
<td>8 (1.32)</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>2 (0.33)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Complications</th>
<th>No. of cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARDS</td>
<td>12 (1.98)</td>
</tr>
<tr>
<td>Pleural effusion</td>
<td>10 (1.65)</td>
</tr>
<tr>
<td>Renal failure</td>
<td>3 (0.49)</td>
</tr>
<tr>
<td>Multi organ failure</td>
<td>3 (0.49)</td>
</tr>
</tbody>
</table>

Almost similar seroprevalences were reported in studies done by Ukey PM17 and Saini S18 in Central India (31.3%) and Western Maharashtra (30.6%). Lesser seroprevalence was seen in studies done by Smitha Deshkar19, Sood S20 and Rao MS21 in Central India (24.49%), Rajasthan (18.99%) and Andhra Pradesh (17.7%).

The age group which was affected the most in the present study was 20-49 years which accounted for 60.48% of the cases. A study conducted by Kumar A22 et al in Udupi, Karnataka showed that the maximum number of cases (57.3%) were in the age group of 15-44 years. Ukey PM et al17 reported highest seropositivity (43.90%) in children aged less than 10 years followed by 15-30 years (31.71%). Rao MS21 et al also observed maximum seropositivity (35.84%) in the age group of 0-10 years, followed by 22.66% in the age group of 11-20 years. The proportion of seropositivity and their presence in a particular age group may vary from hospital to hospital and it may depend on various factors like the rate of admission to that hospital, the hospital speciality, the treating physicians, the facilities available etc.

It was observed that males (58.06%) were more commonly affected than females (41.93%) in the present study. The ratio of male: female positivity was found to be 1.38:1. The higher seropositivity in males might be because of outdoor activities or increased exposure at work places. It can also be because of lower health care seeking behavior in females and their habit of care seeking from traditional practitioners which go unnoticed from public surveillance system. Almost similar figures were obtained in studies done by Kumar A22 (1.82:1) and Karoli R23 (1.38:1) in Karnataka and Northern India. Halsted SB24 in his article mentions that the immune responses in the form of cytokines are more competent in females than males thus making them more immune than males.

The geographical distribution of dengue cases studied from this hospital data would give us an idea about the proportion of cases in the study area and where the maximum efforts are to be put to minimize the disease prevalence. The seropositivity was found to be higher in urban areas when compared to rural areas. The reason behind this could be the higher density of aedes aegypti in urban areas compared to rural areas, higher density of the houses in urban areas and short flying distances needed for the mosquito. It could also be seen from the present study that there is an increase in number of cases in rural areas when compared to previous years and also that there is new cases occurring in areas where dengue was not previously reported. This could be because of the spread of peri-urbanisation in these areas.
Dengue outbreaks were most commonly seen in the months of June and July in the present study. This is in contrast to a study done in Chennai by Gunasekaran P et al25 where it was reported that higher positivity was seen during the months of September and October. This difference may be because of the pattern of rainfall in different parts of the country. During the rainy season, the survival of the mosquito is longer and the chance of transmission of the virus is also greater26. The post monsoon stagenon-sting mosquito is longer and the chance of transmission of the virus is also greater26. The post monsoon stagnant water pool also acts as a breeding ground which favours the increase in disease prevalence.

The most common clinical features in dengue disease was fever (99.66%), followed by myalgia (71.94%) and headache (48.18%). Petechiae or skin rashes were found in 20% of the patients and bleeding manifestations seen in 5.11%. Similar findings were reported by Turbadkar D et al27 in a study done at Mumbai. Fever was the major presenting complaint in their study, followed by icterus, myalgia and headache. More than 90% of the diagnosed cases every year were classified as dengue fever and less than 5% of them were either dengue hemorrhagic fevers or dengue shock syndrome. The results are similar to the study done in Karnataka19.

**CONCLUSION**

The present study provides data about the epidemiological trends of dengue over a period of three years. It can be concluded that the dengue cases are more commonly seen during the monsoon but there are also a few cases that occur during other seasons. Most of the cases were either from urban or periurban areas. Fever, headache, myalgia, vomiting and abdominal pain were the commonest complaints and petechiae was the most common bleeding manifestation. To conclude, it is evident that there is an increase in the number of dengue cases in the study area and intervention is necessary to bring down the morbidity associated with this disease.

**REFERENCES**


Changes in Addiction Pattern in Patients after Being Diagnosed with Oral and Oropharyngeal Cancer

Rakesh Kumar¹, Ajay J Panchal²

ABSTRACT

Introduction: Head and neck cancer predominantly relates to tobacco and alcohol abuse. Majority of patients give up addiction on their own after diagnosis. The present study explores the changes in addiction pattern in patients diagnosed with cancer of oral cavity and oropharynx.

Material and methods: The patients who were diagnosed with, and received treatment for oral cavity and oropharyngeal cancer from 2012 to 2017.

Results: Study findings showed that majority patients of oropharyngeal cancer were found to be addicted to both tobacco and alcohol, as compared to only tobacco addiction in majority patients of oral cancer. After treatment most patients of oral cancer had given up addiction. Relatively more patients of oropharyngeal cancer continued to smoke and drink after treatment. Only 80% of all patients in the study were addiction free at 6 months post-treatment. The majority of non-quitters were males, largely uneducated, from rural background, aged 50 years or more. Only 60% patients were advised to give up addiction. None recalled being offered help to quit addiction in terms of medical treatment and/or counseling.

Conclusion: A number of cancer patients continue to be addicted to tobacco and alcohol. They are at risk of poor treatment outcomes and recurrence. There is a need to increase awareness regarding offering treatment for these addictions, which is currently lacking in our health care system.

Keywords: cancer, addiction, tobacco, alcohol, quit

INTRODUCTION

Incidence of cancer in head and neck region is gradually increasing and imposing a huge burden on the health care delivery system of India. There are many risk factors known - smoking, drinking, radiation, nutritional deficiency, sedentary lifestyle, genetic predisposition etc. Recently infection with HPV is also considered as a possible risk factor for oropharyngeal cancer.¹

In South-central Asia, the oral cavity and oropharynx are commonest sub sites, where 80% of head and neck cancers are found.² Oral cancer is the commonest cancer, topping the cancer registries in India. In India, about 200,000 new cases of head neck cancer are detected every year.³ Another distressing fact in our country is that 60-80% of patients present with advanced disease, as compared to 40% in developed countries.⁴

Smoking is a major risk factor for head and neck cancer, and the risk of developing cancer in smokers is six times that of non-smokers for tumours of the upper aerodigestive tract.⁵ Tobacco in all its manifest forms can be carcinogenic. It is consumed in our country in various forms.

Alcohol is a major cause of cancer at certain sites in the body. The sites significantly associated with
alcohol use are oral cavity, pharynx, larynx, esophagus, liver, breast, and colon and rectum.6, 7 The risk of alcohol-related cancers increases with increasing amount of alcohol consumption.8 Drinking along with smoking increases risk many times.

Many studies show that approximately 1 in 10 cancer survivors smoke.9 It is the same in case of alcohol. Persistent addiction following a cancer diagnosis has a marked detrimental effect on treatment outcome. It is associated with diminished effectiveness of cancer treatment. There are increased risks of cancer specific mortality, recurrence and second primary cancer.10, 11 All these increase morbidity, decrease quality of life 12, 13 and lead to decreased overall survival.10, 14, 15

Staying away from addiction increases the chances of disease free survival. Some patients remain addicted even after treatment so all efforts should be made to promote quitting the addiction in cancer patients as cessation of addiction is essential for improving their prognosis. The counseling and guidance along with medications to give up addiction should set in soon after diagnosis and should continue through their path of recovery.

MATERIAL AND METHODS

Patients who were diagnosed as having squamous cell carcinoma of oral cavity and oropharynx on histopathological examination, between January 2012 and December 2017, at our tertiary care Center, SMIMER were included. It was a retrospective analysis.

The inclusion criteria of our study were as follows. Patients diagnosed and completed the treatment offered – surgery, surgery with adjuvant radiotherapy or radiotherapy

The exclusion criteria were as follows: Patients who were diagnosed but did not complete the prescribed treatment or were lost to follow up.

All eligible cases were explained about the purpose of the study and informed consent was taken before inclusion in the study. Those who were eligible and consented were interviewed using a pretested, semi-structured questionnaire schedule prepared in local language. The patients were questioned about their addiction at least six months after discharge after surgery or after completion of radiotherapy.

The questionnaire consisted of items on demographic profile including age, sex, literacy and location. They were questioned in relation to their addiction- their habits and awareness about addiction being risk factors. Enquiry was made regarding assistance offered to quit addiction.

Confidentiality was assured at all level of the study.

RESULTS

Socio-demographic profile of the patients

A total of 120 patients (n_total = 120) ranging from 29 to 86 years, who underwent treatment for oral cancer (n oc=100) and oropharyngeal cancer (n_op=20) were considered. Their epidemiological details and addiction habits were taken into consideration. Characteristics of the individuals are presented in Table 1. Majority of patients of oral cancer were found in the age group less than 50 yrs, while patients with oropharyngeal cancer were more than 50 years of age. The study group showed predominance of males, i.e. 98 subjects were male and 22 were female.

The educational level of this study group was categorized into literate or illiterate, 103 of them were found to be illiterate, 17 were literate. 81 patients were resident of rural area.

Addiction pattern

Among patients of oral cavity cancer, the common addiction was tobacco chewing (35%). Addiction to tobacco in smoked or smokeless form was seen in all patients. Only 15 % patients had addiction of both tobacco and alcohol.

Addiction to tobacco with alcohol was more common in patients with oropharyngeal cancer 65% (Vs 15 % in patients of oral cancer).

On being asked whether they were aware of the fact that their addiction was the most important risk factor for their current condition, majority expressed their ignorance (90 %). Only 10% patients were aware of the causative association.

Status of addiction 6 months post- treatment

At 6 months post diagnosis and treatment, 21 patients (n oc addicts) with oral cavity cancer and 5 patients (n_op addicts) of oropharyngeal cancer i.e. 20% (26/120) of patients continued to remain addicted. The rest 94 patients did not go back to addiction. (Table 3)


The following were features of patients who continued to be addicts - they were likely to be illiterate male of age more than 50 years from a rural background. Relatively more patients of oropharyngeal cancer continued to be addicted as compared to oral cancer patients. (Table 3) As these were the patients who were addicted to both tobacco and alcohol hence they found it very difficult to give up addiction.
Table 1: Socio-epidemiological profile of patients

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Oral cavity cancer (noc=100)</th>
<th>Oropharyngeal Cancer (nop=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;50 yrs</td>
<td>60</td>
<td>9</td>
</tr>
<tr>
<td>≥50 yrs</td>
<td>40</td>
<td>11</td>
</tr>
<tr>
<td>Gender</td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>80</td>
<td>18</td>
</tr>
<tr>
<td>Female</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>Level of education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>90</td>
<td>13</td>
</tr>
<tr>
<td>Literate</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>65</td>
<td>16</td>
</tr>
<tr>
<td>Urban</td>
<td>35</td>
<td>4</td>
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</tbody>
</table>

\% = ((noc+nop)/120) x 100

Table 2: Addiction pattern

<table>
<thead>
<tr>
<th>Variables</th>
<th>Oral cavity cancer (noc) (%)</th>
<th>Oropharynx cancer (nop) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco chewing</td>
<td>35 (35)</td>
<td>2 (10)</td>
</tr>
<tr>
<td>Smoking</td>
<td>20 (20)</td>
<td>2 (10)</td>
</tr>
<tr>
<td>Chewing + smoking</td>
<td>30 (30)</td>
<td>3 (15)</td>
</tr>
<tr>
<td>Tobacco + alcohol</td>
<td>15 (15)</td>
<td>13 (65)</td>
</tr>
<tr>
<td>Awareness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>10 (10)</td>
<td>2 (10)</td>
</tr>
<tr>
<td>No</td>
<td>90 (90)</td>
<td>18 (90)</td>
</tr>
</tbody>
</table>

Table 3: Characteristics of addicts post treatment (n = 26)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Oral cavity cancer (Nocc addic, 21/100)</th>
<th>Oropharynx cancer (Nopc addic, 5/20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 50 yrs</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 50 yrs</td>
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<td>3</td>
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<tr>
<td>Gender</td>
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<tr>
<td>Male</td>
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<td>4</td>
</tr>
<tr>
<td>Female</td>
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<td>1</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literate</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Illiterate</td>
<td>13</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 4: Post Treatment Support with respect to Addiction

<table>
<thead>
<tr>
<th>Post Treatment Support</th>
<th>Oral cavity Cancer (noc=100)</th>
<th>Oropharynx Cancer (nop=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advised to Quit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>57</td>
<td>15</td>
</tr>
<tr>
<td>No</td>
<td>43</td>
<td>5</td>
</tr>
<tr>
<td>Helped to Quit-Medication/Counseling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No</td>
<td>100</td>
<td>20</td>
</tr>
</tbody>
</table>

DISCUSSION

Behavior is long-recognized as important contributors to cancer include tobacco and alcohol use, poor diet, physical inactivity, high-risk reproductive behavior, and occupational hazards. All patients in the present study had addiction in one form or the other. This does not in any way mean that all patients who are addicted have cancer. As in certain patients, cancer develops even though they do not have any addiction, pointing towards multifactorial interplay for carcinogenesis.

Why a person gets addicted is still a subject matter of intense research and debate in scientific field. Addiction is a result of very complex interaction between genetic, environmental and individual traits. It is commonly agreed that addictive behaviors exert their rewarding effects by increasing dopamine in the striatum—a central structure in the meso-cortico limbic brain reward pathway.

Due to the social and cultural practices, the prevalence of addictions was found more in male compared to female. Males far outnumbered females when we consider cancer of oropharynx. Majority of patients were more than 50 years. Patients with carcinoma of oropharynx presented at a later age as compared to oral cavity cancer patients and they had addiction of both alcohol as well as tobacco. Tabrena et al in a study in France, showed that most oropharyngeal cancer (approximately 70%) are still imputable to alcohol and tobacco consumption with a mean age at diagnosis at 60-65 years.

As 68% patients were from rural background and 86% patients were illiterate, they were unaware of the fact that tobacco (smoking or chewing) and/or alcohol use is an important risk factor for cancer (Table 1). Only 10% patients were aware of the causative association. These findings are in agreement with other published studies by Saraswathi et al. and Gupta et al. Coup et al concluded after their study that it is necessary to provide high-risk drinking survivors who have experienced alcohol-related cancer with more aggressive interventional therapy for quitting alcohol consumption.

Most of the patients gave up addiction on their own. During frequent contact with and visit to the patients recalled being offered any help regarding quitting their addiction to smoking or alcohol. This is an eye-opener! (Table 4)
health care facility, many patients realize that their addiction is one of the factors responsible for their health condition or it may so happen that the patient on their own decided not to go back to addiction. Because of prolonged period of convalescence after surgery and/or radiotherapy, they inevitably remained away from their addiction for a reasonable period of time. After surgery or radiotherapy there can occur dysphasia, odynophagia, xerostomia, mucosal sensitivity, pain, taste alteration or taste loss, trismus, limited tongue mobility or narrow oral aperture, discontinuous jaw and dental disease. As a result, eating and the eating experience may remain problematic for months or years, and for some, eating may never return to normal. This may be responsible for majority of patients refraining from addiction during and after convalescence. 

There were more alcoholics among carcinoma oropharynx than oral cavity cancer patients. They continued to drink and smoke even after being diagnosed with cancer. These patients found it more difficult to give up addiction as compared to oral cavity patients. The longer the patient has remained addicted, the more difficult it is for him to quit. 

Cigarette smoking is associated with over-expression of the proto-oncogene Bcl-2, which is a protein known to inhibit apoptosis – programmed cell death. This is one mechanism known to promote carcinogenesis. Field change as a result of smoking is thought to be the reason for the development of recurrences and second primary lesions. Therefore continued smoking during post-treatment period is associated with reduced survival.

Carcinogenesis is also seen in tissues that are in direct contact with alcohol and the risk increases with increasing exposure. The mechanism of carcinogenesis likely involves ethanol’s genotoxic metabolite, acetaldehyde. Additional evidence comes from East Asian populations, in which variant genotypes that impair aldehyde dehydrogenase are common (thereby raising aldehyde concentrations) and the incidence of aerodigestive tract tumours is increased. Because alcohol is a solvent, other toxic compounds, particularly those added to inferior quality products to enhance palatability, might also play a part in stimulating new growth.

The present study found that though 60% patients recalled being advised to quit addiction; none recalled being offered any medical or psychological assistance to quit. Many cancer patients who smoke and/or drink do not get proper assistance to quit or stay quit. This is quite surprising, as many cancer patients want to quit. We should help the patients by getting a psychological counseling and requisite medical treatment to enable quitting the addictions. Addiction treatment should start as close to the time of diagnosis as possible. The closer the cessation of addiction is to the time of diagnosis, the higher the likelihood for continued abstinence from addiction.

80% patients who underwent treatment had given up addiction. Only 20% (n addicted = 26 /120) patients were addicted at 6 months post-diagnosis and treatment. The patients who chewed tobacco could give up earlier. Patients who smoke and drank were less likely to give up, as they had probably become psychologically more dependent on these substance. Hence quitting was difficult. Despite the large proportion of patients with head and neck cancer with addiction who attempt to quit, a substantial amount relapse. This occurs due to interplay of various factors in the immediate post quit period like withdrawal symptoms, physical symptom burden, psychological distress, lack of information etc. Proper emphasis has to be given in post treatment follow-up period, to reinforce maintenance of status as a quitter.

Organizations like American Society of Clinical Oncology (ASCO) and the American Association for Cancer Research (AACR), routinely promote de-addiction treatment integrated with cancer care. As tobacco and/or alcohol addiction account for an estimated 75% of head and neck cancer diagnoses, the treatment protocol should be accompanied by recommendations for quitting addiction to facilitate reduction in recurrences, symptom burden, treatment complications, and mortality.

CONCLUSION

At present, treatment for addiction does not figure in delivery of cancer care. This is a blow for patients – they are not routinely screened and so are usually diagnosed at an advanced stage; and to add to that, they are not offered proper guidance in terms of quitting their addiction after being diagnosed with cancer. They are neither counseled nor helped to quit their addiction. Several leading oncology organizations have identified this as a missed opportunity for addressing an important modifiable behavior associated with poorer cancer outcomes. There is a need to increase awareness about this aspect of cancer care amongst both the care givers and the patients alike. Community measures to curtail addiction can reduce the number of head and neck cancers and also improve survival from head and neck cancer.

REFERENCES


Article Format

The First Page should comprise of the Title; Full name/s [Title, Given name, Family name, Lineage (ancestral family name)], qualifications and designation of the author/s; Address for correspondence; e-mail of corresponding author; Key words and Abstract.

Suggested length of articles:
Original Work - 5000 words, 4 tables, 4 graphs, 3 images/photos; references limited to 20
Case Reports - 1500 words, 2 tables, 2 graphs, 2 images/photos; references limited to 10
Short Communications - 1200 words, 1 table, 1 graph, 1 image/photo; references limited to 10
Comments/Letters to the Editor - 800 words; references limited to 8

Components of Articles:
Original Article, Review Articles, Current Interest: Title, Authors and affiliations, Summary/Abstract, Introduction, Methods, Statistics, Results, Discussion, Conclusion, Acknowledgements, References
Case Reports, Short Communications: Title, Authors and affiliations, Summary/Abstract, Introduction, Results/Case, Discussion, Conclusion, Acknowledgements, References
Comments/Letters to the Editor: Title, Authors and affiliations, Introduction, Discussion, References

Tables
- Tables should be self-explanatory and should not duplicate textual material.
- Tables should be less than 10 columns and 25 rows.
- Number tables, in Arabic numerals, consecutively in the order of their first citation in the text and supply a brief title for each.
- Place explanatory matter in footnotes, not in the heading.
- Explain in footnotes all non-standard abbreviations that are used in each table.
- Obtain permission for all fully borrowed, adapted and modified tables and provide a credit line in the footnote.
- Tables with their legends should be provided at the end of the text after the references. The tables along with their number should be cited at the relevant place in the text.

References
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