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Editorial

Rural and Urban Health training Centers and Community Medicine: my musings

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(Strong disclaimer: The views expressed in this article are my own in my personal capacity. They no way reflect on the views of journal or government to which I am a part and the institute where I am currently working.)

Rural and Urban Health Training Centers have been associated with Community Medicine Department (CMD) since long when these departments were known with different nomenclatures. Who amongst us has not heard of places like Singrur, Vallabgarh, Palghar or Sarojininagar? All these places have been associated as health training centers with premier institutes of Public Health and have been the sources of community based studies on important public health problems. Basic idea behind evolution of these places as field practice areas for the department was to:

1. Provide facility for **community based learning** by undergraduate (UG) and postgraduate (PG) students. Students learn better about patients and their disease in community settings rather than while seeing them in OPD or wards; more true as they learn epidemiology of disease and various national programs
2. By involving faculty of department, these areas can be developed into **centers of excellence**; better achieved by:
 - a. Skill building of field staff
 - b. Closer supervision, monitoring and evaluation (M & E) of routine activities and national health programs
3. For undertaking **departmental research** (especially applied) as per the needs of administrators

Thereafter the idea of RHTC and UHTC was enforced by Medical Council of India (MCI) initially as guidelines and later as bindings on all medical colleges. These guidelines provide for adoption of 3 primary Health Centers (PHCs) out of which at least 1 is converted in RHTC with additional provision of manpower and buildings. Similarly 1 Urban Health Center (UHC) should be adopted and developed as UHTC again with additional manpower provided and some extra rooms (5 – 6 including 1 seminar room). Manpower provisions at RHTC and UHTC include posts of Assistant Professor (AP), Lady Medical Officer (LMO) and paramedical staff. All colleges whether they liked it or not submitted to the wishes of MCI and created RHTC and UHTC. MCI has insisted on minimum provisions in terms of infrastructure and manpower but most of the colleges with exception of few like MGIMS, Wardha have taken this as maximum and not gone beyond that. Wherever the RHTC and UHTC were created, immediate benefit perceived by the departments was creation of 2 posts of AP as in-charge RHTC and UHTC; helpful to accommodate 2 fresh pass outs. However this has a built in threat of field posting (away from the comfort of medical colleges); therefore mostly junior most AP are appointed on these posts, who after joining wait for next juniors to join who are then handed over these posts. Needless to say, it is persisting like this at most of the places.

Let us look at the different stakeholders in development of RHTC and UHTC.

1. **From Medical College:** CMD, Office of the Dean, Other departments such as Medicine, Pediatrics, Obstetrics & Gynecology

2. **State Health department** It includes BHO, CDHO and RDD mainly providing for manpower and technical skills,
3. **Local bodies:** Primarily owner of PHC (Zila Panchyat) and UHC (Corporation or equivalent urban body)
4. **Beneficiaries**
 - a. UG (including interns) and PG students
 - b. Community at large - end user
 - c. Faculty of department updating their skills
5. **Other Functionaries:** Are from other departments with cross cutting areas such as Women & Child Health (ICDS), PWD or PIU (construction & maintenance of buildings), Education (for school health), Social Justice & Empowerment (various welfare campaigns like “save the girl child”), Rural and Urban Development and Panchyat Raj Institutions (PRI) etc. Extent of their involvement basically depends up on our enthusiasm of developing RHTC and UHTC.

Right from the letter of permission (LOP) given by MCI to a new medical college, evolution of RHTC and UHTC begins. Some of the important points which need deliberations are as follows:

1. Identification of centers: For RHTC, a PHC is selected within commuting distance (< 1 hour for one side) and should be preferably 24 x 7 (with extra manpower helpful in future development). It must have sufficient OPD load and available land for extra construction. RHTC shall not be at the periphery of city, in that case in future it will be engulfed by urban expansion and department has to select a new RHTC. Similarly UHC selected to develop as UHTC should be within reach to the college (preferably 3- 5 kilometers) catering large slum population where apart from providing services, training and research can be undertaken. As per MCI, except for 5 – 6 rooms (including one large

seminar room), UHTC does not require any extra construction. As an evidence of community participation, local authorities must be enthusiastic and supportive in this identification process for RHTC and UHTC.

2. Infrastructure: In addition to the existing building of PHC and UHC, MCI has spelled out the building plans for both RHTC (quite exhaustive) & UHTC. Many colleges do have buildings constructed long back or being shared with Regional Training Centers. Many new colleges in Gujarat are fortunate that buildings for RHTC with all specifications are under-construction. Once the buildings are ready, departments have to procure furniture, fixtures, utensils etc to make them fully functional.

Hostels at RHTC are another debatable issue. In this era of rapid transport internees may not stay overnight at a hostel just 15 – 20 kilometers from medical college unless some round the clock training program is arranged or it is expected that posted intern/ PG students take part in clinical emergency services along with obstetric deliveries (if such services exist at the RHTC or UHTC). No doubt once all these facilities in terms of infrastructure and manpower are provided, such round the clock facilities can be developed. While at many places even faculties are commuting on daily basis, it is difficult to expect interns to stay at RHTC overnight. Anyway till this MCI directive is modified (or not), we shall develop hostels too at RHTC. MCI guidelines for infrastructure too are for minimum but are taken as maximum. Many PHCs have space crunch or buildings are in dilapidated condition. Therefore, if some extra rooms are constructed by us, they can be shared with PHC. Otherwise too, the constructed seminar room at RHTC and UHTC can be used for monthly meeting and training of center’s staff. Since there is no provision of accommodation for AP and LMO at RHTC, it can be safely assumed that they are not expected to reside there. As such if an AP (junior most) is compelled to stay

fulltime at RHTC or UHTC (till next junior arrives), attrition rate will be very high.

3. Manpower: MCI proposes manpower at RHTC and UHTC exclusively for teaching which include in charge AP, LMO and Para medical workers over and above the regular staff posted there by health department. At places authorities are reluctant to fill up these posts and show regular staff of PHC/ UHC as their own. However, with the pressure from MCI and the realization by authorities, these posts are being filled increasingly. Once filled these posts become an asset to CMD and they work hand in hand with regular staff (of RHTC & UHTC) complimenting each other's efforts. MCI has not proposed for the posts of house keeper/ store keeper, essential to look after the property at RHTC. With overnight staying of interns (male & female) at RHTC, a round the clock security arrangement is also required. Additional sweeper is also needed looking to the structure of RHTC. It is essential that manpower provided from both heads should be optimally utilized and duplication of work should be avoided. This can be best achieved by frequent coordination meetings between Professor & Head (CMD) with CDHO and AP with BHO (THO) and PHC MO.

4. Vehicular support: Dedicated vehicular support is essential for CMD and more so for its RHTC and UHTC. Unfortunately at many institutions when such support is asked for, it is perceived as luxury by authorities/ other departments. It is essential for us as the ventilator or dialysis machine or ICCU are for Medicine department. When all activities commence, a department needs at least 1 SUV type vehicle (for 6 – 8 persons) and 2 buses with 35 – 40 capacity with adequate manpower wherein each vehicle has an independent driver and attendant/ cleaner for college buses. While 1 bus will remain in department catering for community postings of different UG batches, other bus has to be at RHTC and UHTC for intern's postings and departmental research and other field based activities. To my

knowledge, no medical college in Gujarat has this type of vehicular support.

5. Administrative Control: MCI insists that complete administrative control of RHTC and UHTC should rest with Dean of the institute and CMD (?) respectively. I am personally of the view that neither of the two (Dean & CMD) is prepared to take over the administrative control nor the current controlling bodies (Zila Panchyat & Urban bodies) are willing to hand over the same. Another solution is to have our own RHTC and UHTC but then they will be very resource intensive and will have overlapping with government run facilities. Therefore we may sign an MOU with health centers (short of administrative control) clearly spelling out the role and responsibilities of both sides to facilitate the arrangement. Again this matter need to be raised with MCI and can be processed further only after the MCI accepts this arrangement.

Activity Plan: Till now we have looked into some issues regarding the development of RHTC and UHTC. Once developed what are the different activities which can be undertaken at these centers? MCI does not specify the type of activities a department shall undertake at RHTC and UHTC. Based on the inputs received from various departments including my own in the Gujarat state, I propose the following activities:

1. Teaching and training (UG): All UGs should be taken to RHTC (& other 2 PHCs) and UHTC during their community postings with the aim to:
 - a. Understand the field epidemiology including physical and social environment of the urban and rural areas.
 - b. Understand the functioning of RHTC and UHTC,
 - c. Interact with manpower posted
 - d. Learn about the implementation of

- various national programs
- e. Conduct field survey, case study and mini projects
2. Teaching and training (Interns): All interns during posting in Community Medicine must be posted by rotation at both RHTC and UHTC. Internship is an ideal period to pick up and refine the clinical/ communication skills under the “real field situation”. This opportunity can be further used to expose them to other institutions such PRI, administrative offices of Panchayat, BHO etc. Each intern can be made mentor for one Village Health and Sanitation Committee (VHSC).
 3. Teaching and training (PG): PG students must be posted by rotation to both RHTC and UHTC to:
 - a. Learn field epidemiology through understanding physical and social environment
 - b. Support the work at centre under supervision of faculty. It will enhance their administrative, teaching, clinical and communication skills.
 - c. Carry out outbreak investigations
 - d. Prepare epidemiological, managerial and social case studies.
 - e. Allot dissertation work as far as possible within field areas
 - f. For departmental research, skill building of field staff and evaluation of any program, priority must be accorded to these areas.
- g. A resident of the department can be appointed as mentor for 1 sub-centre or a few VHSC in the RHTC for a period of 6 – 12 months.
4. Adoption of a sizeable population at both RHTC and UHTC (5,000 – 10,000) with the help of paramedical workers for regular follow up
 5. Other activities proposed:
 - a. **Observance of various health-related days and weeks:** many of us are already doing it. Regular observance of World Health Day, World AIDS Day, malaria fortnight, nutrition week (list is endless) at RHTC and UHTC go long way in generating awareness in community and establishing our credibility. Paramedical staff posted under CMD in coordination with regular staff of PHC/UHC can be used for community mobilization and organization of these events. As on now there is no budgetary provision for CMD to take up these activities. I propose that a minimum allocation of say Rs. 10,000 – 20,000 per year per centre be made to support these activities. Amount appears to be very small but will go long way in the conduct of these activities. A proper documentation of all such activities and submission to

authorities is equally important. It is to be done with regular staff of PHC/ UHC and due credit can be shared by both of them with their respective authorities.

- b. **Multi-specialty OPD** at RHTC and UHTC (once a week/ month) with proper referral to medical college will be helpful in providing quality care and building up the rapport with community
- c. Skill building of local staff by faculty of Community Medicine and other departments (Microbiology, Pathology, Medicine, Gynecology, Pediatrics, Ophthalmology, ENT etc.) can help in developing these centers as role model for others. As part of capacity building of staff, one faculty of Community Medicine and sometimes from other departments shall attend monthly staff meeting at RHTC and UHTC and discuss

one relevant topic with them.

- d. Adoption of local secondary schools to facilitate school health and Mahila Mandals for engaging them in social activities.

All the above listed activities when undertaken by us will give us an opportunity to put our technical knowledge in to the practice for the welfare of the community. The list of suggestions can be endless and these are only few of my thoughts put up before you. I am sure all of you have even more beautiful thoughts or even implementing many of them. But one thing I am sure that this idea of developing RHTC and UHTC is essential for welfare of community, learning of our UG, PG and even our faculty and finally for the growth of our subject. The real subject can be learned only in the community after we come out of the four walls of medical college.

Acknowledgements: I am grateful to Dr. Shobha Misra (Vadodara) for sharing her activities, Dr. A.M. Kadri (Rajkot) for reviewing the script and my entire teaching staff at Sola for giving excellent suggestions during our formal brainstorming and informal interactions.

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GUJARAT CHAPTER

Original article

A study of knowledge, attitude & practice towards contraception among married women of reproductive age group having ≤ 2 children residing in Vasna ward, Ahmedabad, Gujarat, India

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Abstract:

Aims: To assess the knowledge, attitude & practice (KAP) towards contraception among women.

Study design: Cross sectional study.

Methods and Material: Total 100 married women of reproductive age group having ≤ 2 children of Vasna ward of AMC were selected by purposive sampling.

Results: About 56% of study population was within 18-24 years of age group. Maximum knowledge regarding contraception was of condom (76%) followed by OC- pills (63%). Major sources of knowledge was link-workers(50%) followed by media(38%). Physical weakness due to under-nutrition(67%) for mothers & LBW(53%) for children were the most commonly known adverse effects of uncontrolled childbirth. Most of the women (90%) desire to have ≤ 2 children because of known benefits like Better education of child (54%), less economic burden (46%). At-least one male child is must according to 36% of the women and the main reason for this was to take over family(38%) followed by in-law's wish(18.9%). Most(80%) had not used any contraceptive method before the birth of 1st child and almost 1/3(46%) had not used between 1st & 2nd child. Commonly used contraceptive method between 1st & 2nd child was condom (41.7%) followed by OC-pills (15.2%). Education of woman was directly proportional to knowledge regarding different contraceptive methods ($p=0.004$) & inversely proportional to preference for male child ($p=0.03$).

Conclusions: In-spite of easy accessibility and availability, utilization of contraceptives is affected by various factors including educational & cultural factors.

Key-words: contraception, KAP, married women of reproductive age-group.

Key Message: Not only the knowledge but attitude also affects the practice of contraception

Introduction:

Uncontrolled population explosion is single greatest threat to country's economical, social & political development. India was the first country to launch a National Family Planning Programme with aim to reduce birth rate to stabilize population. With only 2.4% of world's land area, India is supporting about 16.87% of world's population. India was the 1st country to launch a national family planning control programme with aim to reduce the birth rate to stabilize population¹. Spacing methods do not only decrease fertility but also improve the health of mother by delaying the next child².

Total unmet need for family planning is 8.0% in Gujarat & 12.8% in India. Women using any modern contraceptive method are 56.5% in Gujarat & 48.5% in India³.

Aims & Objectives:

- 1) To assess their knowledge regarding different contraceptive methods,
- 2) To know their attitude towards sex preference & its reasons,
- 3) To know about their preference for contraceptive methods during different phases of reproductive life.

4) To know their views regarding disadvantages of uncontrolled childbirth on the health of mother as well as the child & advantages of small family.

Subjects and Methods:

Cross-sectional study of 100 Married women of reproductive age-group having ≤ 2 children was carried out in the Link worker served areas of Vasna ward of Ahmedabad city. Selection of sample was through purposive sampling technique. Data was collected through pre-designed & pre-tested Performa by house-to-house visit. Informed verbal consent of every the study participant was taken prior to the study. All the data collected is kept confidential. Data analysis was done by appropriate statistical software & appropriate statistical tests were applied.

Results:

Around half of the study population (57%) falls in age-group of 18-24 years. Maximum population (42%) has education up-to primary schooling. Maximum knowledge regarding contraception was of condom (76%) followed by OC- pills (63%), Cu-T (53%) & permanent methods (51%). Around 14% women were either not aware of any contraceptive method or did not reply anything. Major sources of knowledge was link-workers (50%) followed by media (38%), Neighbours (28%) & relatives (11%). (Table-1) Physical weakness due to under-nutrition(67%), anaemia (22%), mental burden (10%), maternal death (6%) & per-vaginal bleeding during pregnancy (4%) were commonly considered as adverse effects of improper spacing for mothers (Graph-1) & LBW (low birth weight) 43% , higher risk of infection (29%), mental retardation (8%), death in early childhood (9%) ,congenital deformity (7%) & foetal loss (7%) were the commonly considered adverse effects of improper spacing on child health. (Graph-2)Most of the women (90%) desire to have ≤ 2 children due to knowledge of its benefits like better education of children(54%), less economic

burden(46%), emotional factors(35%) & health factors(32%).Most(80%) had not used any contraceptive method before the birth of first child. Commonly used contraceptive method during this phase was condom (16%) followed by OC-pills (4%). Almost 1/3rd (33.3%) had not used contraception between first & second child. Commonly used contraceptive method in this phase was condom (41.7%) followed by OC-pills (15.2%) & Cu-T (10.1%).There were 30 couples according to whom their family is completed, out of them 66.7% had used contraception for limiting their family size. (Table-2) Out of 34% who were having an attitude for spacing between marriage & first child 55.9% of those couples had used contraception in this phase of reproductive life, as compared to only 3% not having such attitude. So their practice significantly reflected their attitude for spacing ($p<0.001$). Out of those 79 couples who were already having 1 child, 93.7% were having an attitude for spacing between 2 children, 71.6% of those couples had used contraception in this phase of reproductive life as compared to only 14% not having such attitude. Here also their practice significantly reflected their attitude for spacing ($p=<0.05$) There were 30 couples according to whom their family was completed, out of them 96.6% were having/ had an attitude for limiting family, 75.9% of them had used contraception for limiting their family size as compared to only 10% not having such attitude . So their attitude for spacing significantly reflected their practice ($p<0.001$). (Table-3)There is no significant association of husband's education with use of condom ($\text{Chi}^2 = 2.26, p>0.05$). Education of woman was directly proportional to her knowledge regarding different contraceptive methods ($\text{Chi}^2 = 3.92, p<0.01$) & inversely proportional to preference for male child ($\text{Chi}^2 = 11.65, p<0.05$)(Table-4). According to 37% of study population, a male child is must in

the family. The main reason for preference for a male child was to takeover family (37.8%) followed by in-law's wish (18.9%), financial support (10.85%) & cultural factors (8.1%).

Discussion:

Maximum knowledge as well as use of contraceptives was of condom followed by OC- pills. This may be because of better acceptance & easy availability of condom & OC-pills. Similar results were found in another study conducted in Kanpur by S.K.Kaushal⁴. Major sources of knowledge regarding contraception were link-workers followed by media. Another study by S. Dhabra & S. Malik has also noticed similar findings in which multimedia and Family planning workers were the main sources of knowledge regarding contraception in the community.⁵ For mother, physical weakness due to under-nutrition whereas for child, LBW (low birth weight) was the most commonly considered adverse effect of improper spacing. Most of the women desire to have ≤ 2 children due to knowledge of its benefits like better education of child(54%), followed by less economic burden(46%). This reflects that they understand how important education is for betterment of life. At-least one male child was must according to 1/3rd of the women and the main reason for this was to take over family followed by in-law's wish. There is another study showing the similar results that in-law's wish plays important part in gender preference amongst couple⁵.

Minimum use of contraceptive method was before the birth of first child. So this phase of reproduction should be targeted to increase the contraceptive coverage. Commonly used contraceptive method between marriage & first child was condom followed by OC-pills. Commonly used contraceptive method between first & second child was condom followed by OC-pills & Cu-T. Almost 1/3rd had not used contraception between first & second child. This shows that counselling not only

in postpartum period but also during routine antenatal check-up should be emphasized to effectively protect all couples for proper spacing as well as for limiting. There were 30 couples according to whom their family is completed. Commonly used contraceptive method for limiting family size was Cu-T followed by TL. Out of those whose family is completed Only 2/3rd of them had used any contraception for limiting their family. This finding shows that still one third of couples with completed family have unmet need of contraception for limiting their family. In all the stages of reproductive life, relationship of attitude with practice of spacing and limiting shows that attitude is significantly associated with actual practice of the expressed attitude. Education of woman was directly proportional to her knowledge regarding different contraceptive methods ($p < 0.01$) & inversely proportional to preference for male child ($p < 0.05$). Education of husband was not showing significant association with use of condom ($p > 0.05$). Another study from Ghana also concluded with similar findings.⁶

Conclusion:

Although knowledge of contraception and preference for contraceptive method during various phases of reproductive life varies widely, there is still scope for further improvement. Education of women is important while considering knowledge of contraception and gender preference. Practice of contraception is more likely to be followed when better knowledge with proper attitude is present.

Recommendations:

* Improving female literacy remains an important tool for improving contraceptive practices as well as reducing male child preference.

* Continuous & complete health education by means of BCC activities and strengthening health services will help in increasing the knowledge & thereby practices regarding contraception

Table-1

Characteristics of study population	Percentage (n=100)
Age in years	
<18	2
18-24	57
25-30	31
>30	10
Education of woman	
Illiterate	16
Primary	42
Secondary	29
Higher secondary	10
Graduate	3
Education of husband	
Illiterate	7
Primary	28
Secondary	41
Higher secondary	16
Graduate	8
Occupation of woman	
House wife	10
Un-skilled	80
Semiskilled	3
Skilled	4
Semi-professional	3
Occupation of husband	
Not working	25
Un-skilled	37
Semiskilled	31
Skilled	6
Semi-professional	1
Knowledge regarding different contraceptive methods (multiple answers possible)	
Condom	6
OC pills	67
Cu-T	53
Permanent sterilization	51
Emergency contraception	27
None	14
Source of knowledge regarding different contraceptive Methods (multiple answers possible)	
Link-worker	50
Neighbor	38
Multimedia	28
Relatives	23
Doctors	11
None	11

Table-2

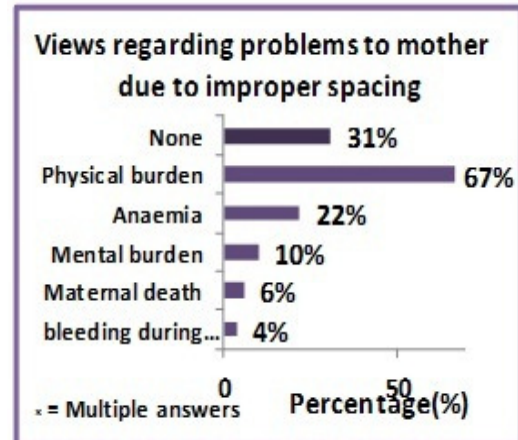
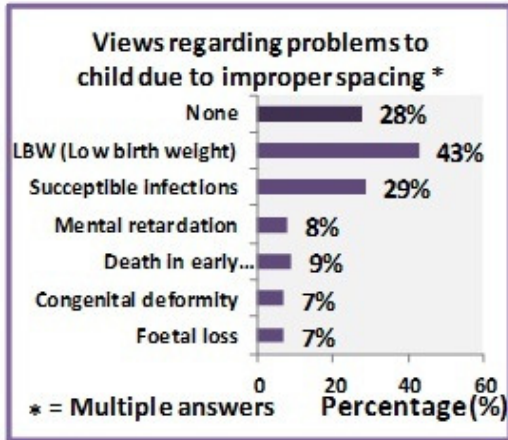
Practice of contraception during different phases of reproductive life					
Different phases of reproductive life	Condom	OC - pills	Cu-t	TL	None
Between marriage & 1 st child(n=100)	16.0%	4.0%	-	-	80.0%
Between 2 children(n=79*)	41.8%	15.8%	10.1%	-	31.6%
After completion of family(n=30*)	20.0%	3.3%	30.0%	23.4%	23.3%

Table-3

Relationship between attitude for spacing & actual practice of contraception among those who have attitude for spacing, during different phases of reproductive life			
Different phases of reproductive life	Between marriage & 1 st child(n=100)	Between 2 children(n=79*)	After completion of family(n=30)
Attitude	34.0%	93.7%	96.6%
Practice	55.9%	71.6%	75.9%
P- value	<0.001	<0.05	<0.001

Table-4. Association between different variables

Variable-1	Variable-2	X ² value	P	Significance
Education of husband	Condom use	2.26	> 0.05	Not Significant
Education of woman	Knowledge regarding different contraceptive methods	11.65	< 0.01	Highly Significant
Education of woman	Male child preference	3.92	< 0.05	Significant



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Original article

Stroke and the use of Smokeless tobacco- A case-control study

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Abstract

Background: Smokeless tobacco consumption has a high prevalence and acceptance in the Indian community. Although a lot of studies have been done on the ill effects of smoking, there is a dearth in the literature on the cardiovascular effects of smokeless tobacco.

Objectives: This study aimed to see the association between smokeless tobacco and Stroke.

Methods: In a retrospective case control study, information on tobacco habits was collected by the means of an interview schedule. 80 case (adult males who had stroke) and 80 controls (adult males who did not have stroke) were identified from four different hospitals in city of Pune in Maharashtra, India. Each case was matched with one control.

Results: The unadjusted Odds ratio for any form of tobacco were significant [2.98(1.43-6.19)] but were statistically insignificant for smoking [2.08(0.96-4.47)] and smokeless tobacco [1.50(0.80-2.79)]. The adjusted odds ratio was calculated by using a multinomial logistic regression. After adjusting for the known confounding factors of hypertension, alcohol use and diabetes, the Odds ratio was significant for smokeless tobacco at [2.3 (1.1 – 5.1)] and smoking at [3.6 (1.4 – 9.2)].

Conclusions: The results show that consumption of smokeless tobacco and Stroke are associated. There was also a significant relation between consumption of smokeless tobacco and ischemic stroke.

Key Words: Smokeless tobacco, Stroke, Case-control study

Introduction:

Stroke is a global health problem. The global annual incidence of stroke is about 16 million¹ and is responsible for loss of 28 million DALYs². India accounts for nearly 1.4 million of the global incidence of stroke cases and results in loss of 6.4 million DALYs³. Given the current epidemiological transition India is going through, the burden of stroke is expected to increase in coming years. Many studies have incriminated role of smoking in contributing to stroke. More recent data from the Inter-stroke study conducted in 22 countries, including India, confirmed smoking as a major risk factor accounting for large population attributable risk of stroke. Compared to extensive literature on the association between smoking and stroke, little literature is found on relation between smokeless tobacco and stroke. Moreover, there are contradictory evidences about role of smokeless tobacco as an independent risk factor for stroke. One Swedish study found evidence of an increased risk of cerebro-vascular mortality, whereas three others found no increase in risk among snuff users⁴. Snuff is clearly distinct form of tobacco and its use is not being common in India. One American study considered both snuff and chewable form of tobacco and showed increased risk of stroke among smokeless tobacco users⁵. However, the chewable form of tobacco available in USA is qualitatively much different from that in India, the later country likely to have more nicotine in its tobacco products. Prevalence of smokeless tobacco use is high in India and even a smaller relative risk might result in higher population

attributable risk. The present study aimed to explore the association of use of smokeless tobacco and stroke in Indian settings.

Methods and Materials:

Prevalence data for stroke are limited and dependent on studies with small sample size and frequent bias. Analysis of the available data indicates higher prevalence in urban India and among urban India; highest prevalence was reported from cities in state of Maharashtra. The study was conducted in Pune which is a major city in Maharashtra. Even with relatively higher prevalence in the city, stroke is a rare event in population; only about two per 1000. The city has presence of both public and private sector, both well equipped to manage stroke and cases are most likely to get hospitalized. Given this background, hospital based case-control study design was chosen. Four hospitals with facilities to manage stroke cases were purposively selected, two each in public and private sectors.

For estimating sample size, following formula on sample size determination was used⁶.

$$N = \{z_{1-\alpha/2} \sqrt{[2 P_2^* (1-P_2^*)]} + z_{1-\beta} \sqrt{[P_1^* (1-P_1^*)]} + 1 / [P_2^* (1-P_2^*)]\}^2 / (P_1^* - P_2^*)^2$$

Where, P_1^* is anticipated probability of exposure for people with disease, P_2^* is anticipated probability of exposure without the disease, $100\alpha\%$ is the level of significance, $100(1-\beta)\%$ is power of the test. A recent Indian study estimated odds ratio of 3.92 for stroke among smokers compared to non-smokers⁷. Review of western studies revealed that smokeless tobacco use was associated with increased risk of stroke (RR = 1.42)⁸. We assumed an odds ratio of 2.5 for calculating sample size. For anticipated probability of 'exposure' for people without the disease, we used nationally available prevalence data on smokeless tobacco use. National Family Health Survey (NFHS) round III found that prevalence of smokeless tobacco use was 36.2% among men and

8.4% among women in India⁹. Given the time and other constraints, it was decided to limit the study to men only. The sample size was estimated to be 73 cases (α error 5% and β error 20%) and equal number of controls.

Male inpatients diagnosed with stroke at the selected four hospitals during study period were explained the purpose of study and were invited to participate. Ethical aspects were explained and informed consent was obtained before enrolling them in the study. Patients with neurological deficit similar to stroke but of different origins like head injury and history of infantile hemiplegia were excluded from the study. Those eligible patients who were willing to participate were recruited in the 'case' group. The control group consisted of adult males who had never suffered a stroke. They were selected from in-patient departments mainly orthopaedics and surgery wards of same hospitals. Patients with any kind of neurological deficit were excluded from the control group as well. While selecting controls, matching was done with cases with respect to age, gender and family income. Informed consent was administered to all the participants prior to data collection. Study participants were interviewed using a structured interview schedule, which had three main sections. The first section included information on demographic and socio-economic variables. Second section was related to exposure variables, smokeless tobacco use as well as confounding factors including hypertension, alcohol use and diabetes. It was not possible to collect past data on obesity, cholesterol levels, and only their present value could be collected, wherever possible. The third section was about present medical condition, including type of stroke and extent of neurological deficit. Data was entered in SPSS version 15.0. Unadjusted odds ratio was computed for stroke in smokeless tobacco users compared with men who never used tobacco. Since matching was not possible

for factors like hypertension, diabetes and alcohol use; logistic regression was used to estimate adjusted odds ratio. Odds ratio was also calculated for those who suffered from ischemic stroke as the later was the main sub-group.

Results:

Sample consisted of 80 cases and 80 controls. The average age of the sample was 61.7 years. The mean age of the cases was 61.8 years and of the controls was 61.7 years. The cases and controls were matched for age (+/- 2 years) and monthly income range of the family. 75(93.7%) cases had Ischemic stroke and 5(6.3%) had Hemorrhagic stroke. The prevalence of various forms of tobacco use among the cases and controls is presented in Table 1. The average duration of time for which cigarettes/ bidis were consumed was 30 years and the average age of initiation for smoking was 25 years. The average duration for which smokeless tobacco was consumed was 37.2 years and the average age of initiation for the same was 19.2 years.

Data regarding confounding factors was also collected. 15 (18.7%) cases and 16 (20%) controls had diabetes whereas 41 (51.3%) cases and 37 (46.3%) controls reported alcohol use. The distribution of these confounding factors among the cases and controls was not statistically different. However, hypertension was significantly more common among cases (42.5%) compared to controls (28.7%). Other risk factors were also considered and included obesity, level of physical activity, cholesterol levels and diet. The tool attempted to measure obesity by means of waist hip ratio. However the same data could not be collected for all respondents, either due to the condition of the patient or due to lack of permission (from hospital or respondent) for taking measurements. Thus the data could not be used for analysis. In certain situations, the patients had external devices like catheters or drains the hip circumference measurement may have been flawed. The waist and hip

circumference measurement data was taken for fifty six respondents from the control group and thirty seven respondents from the group of controls. The average waist hip ratio for the respondents was 0.91. The average waist hip ratio for cases was 0.93 and was 0.88 for controls.

Medical records were reviewed for blood lipid levels; they were available for 42 respondents of which 27 belonged to the group of cases and 15 to the group of controls. Among the cases, average total serum cholesterol level was 155mg/dl, high density lipoprotein (HDL) was 36.8 mg/dl, low density lipoprotein (LDL) was 79.7 mg/dl and very low density lipoprotein (VLDL) was 20.2 mg/dl. Among controls, average cholesterol was 132.6 mg/dl; HDL was 42.4 mg/dl, LDL 63.3 mg/dl and VLDL 23.1 mg/dl. Few (21.9%) respondents reported of self imposed restriction of either salt or excess sugar in their diet with no significant difference between the two groups.

Odds ratio was calculated for all forms of tobacco and then separately for smoking and smokeless tobacco (Table-2). The unadjusted odds ratio for any form of tobacco was significant [2.98(1.43-6.19)] but were statistically insignificant for smoking [2.08(0.96-4.47)] and smokeless tobacco [1.50(0.80-2.79)]. The odds of suffering from stroke are three times more in tobacco consumers as compared to non users of tobacco in the sample. The number of respondents who consumed both forms of tobacco (smokeless and smoked) was very less. Most of the tobacco using respondents either used smokeless tobacco or smoked form of tobacco exclusively. Hypertension, an important risk factor was unequally distributed in the two groups. The adjusted odds ratio was calculated by using a multinomial logistic regression. After adjusting for the known confounding factors of hypertension, alcohol use, diabetes and smoking, the odds ratio was significant for smokeless tobacco (Table-3). Of the different types of stroke, 95% of

the cases had ischemic stroke and 5% had hemorrhagic stroke. A multivariate analysis was done to see the association of smokeless tobacco with ischemic stroke in the presence of other confounding factors. (Table- 4)

Discussion:

The present study showed increased risk of stroke among tobacco users. When adjusted for hypertension, diabetes, alcohol use and smoking, the odds of having stroke, in smokeless tobacco users, was 2.3 times that among non users of tobacco. However, the bi-variate analysis did not show increased risk of stroke among smokeless tobacco users compared with non users of smokeless tobacco. Similar finding was observed for smokers. The reason for the difference in the bi-variate and multivariate analysis may be due to the distribution of the tobacco habits among the respondents. Of the tobacco users, only 5.2% (6/115) used both forms of tobacco namely smokeless and smoked form. Thus, most smokers did not use smokeless form of tobacco. Similar to this, only 6 of the 84 smokeless tobacco users smoked. Since smoking is a known confounding factor for stroke, it might have affected the bivariate analysis. Although some confounding factors were considered in multi-variate analysis, other confounders like diet, obesity and blood lipid levels could not be adequately adjusted for in the study. This could have affected the study findings.

As far as risk of stroke among smokeless tobacco use are concerned, a Swedish study concluded that smokeless tobacco users (moist snuff) are not at a higher risk of stroke as compared to non tobacco users.⁴ However, this Swedish study considered only one type of smokeless tobacco (moist snuff). Moreover the study population was of Sweden whereas the present study was conducted in Maharashtra, India. The types of smokeless tobacco used, the environmental factors and socio

economical factors in both countries vary and this could be the reason of difference in the findings.

A meta-analysis pooled data of five studies in western societies (including the one discussed in above paragraph) estimated the relative risk of developing stroke to be 1.19 for smokeless tobacco users¹⁰. However, this finding was not statistically significant as it considered both current and former users. Relative risk was higher among the current users of tobacco. Present study also considered current users only. Studies have shown that smokeless tobacco has mainly short term effects on cardiovascular system. This suggests that the risk may wane after discontinuation of smokeless tobacco. However, to prove the effect of discontinuation of smokeless tobacco on risk of stroke, a cohort study would be needed. In the present study, testing for dose-response relationship was not attempted because the patients in the study used a variety of products differing from each other not only in nicotine but also other contents. The meta-analysis study showed that data on dose-response did not suggest a strong relation between risk of dying from stroke and frequency or duration of use of smokeless tobacco products.

The meta-analysis found that the relative risk estimated was higher (1.4) for fatal stroke, which did not seem to be explained by chance. Although, the present study considered all types of stroke, it might have missed fatal strokes where the patient died before reaching the hospital or soon after hospitalization and thus, were not available for interview at the time of study. To comment on fatality in short term, a follow up of about a month is needed. This study being a cross-sectional one, follow up could not be done and no comments can be made about risk of fatal stroke.

Majority of strokes in the study were of ischemic type which evolves with atherosclerosis and very few were of

hemorrhagic type which is associated more with hypertension. Recent study on ultrasonographic investigation of carotid intima media thickness showed that smokeless tobacco user has tendencies for atherosclerosis but without definite statistical significance¹¹. This study concluded that occurrence of atherosclerosis in smokers is caused by other components of tobacco smoke than nicotine. In India, smokeless tobacco has

Table 1: Prevalence of tobacco consumption in cases and controls

Tobacco consumption	Cases (n=80) N (%)	Controls (n=80) N (%)	Total (N=160) N (%)
Any tobacco	66(82.5)	49(61.2)	115 (71.8)
Smoking	23(28.7)	13(16.3)	36 (22.5)
Smokeless	46(57.5)	38(47.5)	84 (52.5)
Both	4(5)	2(2.5)	6 (3.7)
No tobacco	14 (17.5)	31 (38.7)	45(28.1)
Gutka	41(51.2)	32(40)	73(45.6)
Misheri	11(13.7)	8(10)	19(11.8)
Pan	5(6.2)	3(3.7)	8(3.5)
Other smokeless	1(1.2)	0	1 (0.06)
Cigarettes	15(18.7)	8(10)	23(14.4)
Bidis	8(10)	10(12.5)	18(11.2)

Table 2: Unadjusted odds ratio of stroke associated with tobacco use among men

Factor	Odds ratio (CI)	p value
Smokeless tobacco	2.6(1.1 – 5.6)	0.016
Smoking	3.4 (1.3 – 8.9)	0.009
Hypertension	2.2 (1.1-4.3)	0.028
Diabetes	1.1 (0.4 – 2.7)	0.447
Alcohol use	0.7 (0.4 – 1.5)	0.579

various forms with various ingredients and the effects seen in present study could be possibly due to these other components but no conclusion can be made about this from the study findings.

To conclude, smokeless tobacco leads to increased risk of stroke especially ischemic stroke independent of smoking, alcohol use or presence of hypertension or diabetes.

Table 3 Adjusted odds ratio of stroke associated with smokeless tobacco use and other confounders among men

Tobacco consumption	Cases (n= 80) N (%)	Controls (n= 80) N (%)	OR (C. I.)
Any tobacco	66(82.5)	49(61.25)	2.98 (1.43-6.19)
Smoking	23(28.7)	13(16.30)	2.08 (0.96-4.47)
Smokeless	46(57.5)	38(47.50)	1.50 (0.80-2.79)

Table 4 Adjusted odds ratio of ischemic stroke associated with smokeless tobacco use

Factor	Odds ratio (CI)	p value
Smokeless tobacco	2.3 (1.1 – 5.1)	0.025
Smoking	3.6 (1.4 – 9.2)	0.007
Hypertension	2.05 (1.1-1.4)	0.043
Diabetes	0.9 (0.4 – 2.3)	0.959
Alcohol use	0.8 (0.4 – 1.6)	0.579

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“The aim of medicine is to prevent disease and prolong life, the ideal of medicine is to eliminate the need of a physician. “

William James Mayo

“Medicine, is the only profession that labours incessantly to destroy the reason for its own existence.”

James Bryce

“He who cures a disease may be the “skillfullest”, but he who prevents it is the safest physician”

Thomas Fuller

"Take care of your body. It's the only place you have to live in."

Jim Rohn

Original article

Knowledge of HIV /AIDS, STI and condom use among the Injecting Drug Users (IDUs) of Ahmedabad city, Gujarat, India

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Abstract:

Background: IDUs are vulnerable of acquiring HIV/STI due their injecting practices and high risk behaviour.

Objectives: To assess the knowledge of IDUs about HIV/AIDS and STI.

Methods: It was a cross sectional study done in Ahmedabad Municipal Corporation in 2010. 10% (40) of registered IDUs (400) were included by systematic sampling.

Results: All IDUs were males and median age was 34.5 years. Almost half had no formal education. Median age for initiating drug injection practices was 25 years. All IDUs had knowledge of HIV/AIDS and knew that it was infectious. 80% IDUs believed that it was curable and 25% IDUs believed that there is a vaccine for it. All IDUs were tested for HIV once in life time. Sexual route was known to 70%, vertical transmission to 65% and infected needle- syringe route to 60%. Hand shake, sharing bathroom and sharing clothes does not spread HIV was known to 70%, 57.5% and 50% respectively. Knowledge of modes of prevention showed that abstinence was known to maximum. 62.5% IDUs had correct knowledge of STI and 22.5% had visited STI clinic once in life time. 67.5% IDUs mentioned Vesicles and 62.5% Urethral discharge as STI symptoms. All IDUs knew about condom and 25% IDUs had sexual exposure without condom in last 1 year.

Conclusion: Knowledge of HIV/ AIDS is good but testing for HIV is poor. Using sterile needle and syringe protect against HIV is poorly known to IDUs. Overall knowledge of STI symptoms is also poor.

Key words: IDU, HIV/AIDS, STI

Introduction:

As per the UNAIDS 2000 report , it is estimated that between 5 and 10 per cent of HIV infections have resulted from injecting drug use globally, and in central Asia more than 80% of new infection of HIV are related to IDU (injecting drug user). An estimated 12.5 million people inject drugs across the globe, most being between the ages of 15 and 30¹. As per NACO about 2.2 % of all HIV cases in the country are transmitted through injection drug use .In the Punjab city of Ludhiana, HIV prevalence among IDUs is about 21% and many IDUs are not aware that they are at risk of contracting HIV^[3]. Thus the present baseline study was done to understand the level of knowledge about HIV/AIDS and STI among the IDUs (Injecting drug users) of Ahmedabad city

Material and methods:

A Cross sectional study was carried out in Ahmedabad Municipal Corporation area during April –May, 2010. The only NGO working for targeted interventions amongst IDUs in Ahmedabad city was National Medicos organization (NMO). In the present study 10% (40) of registered IDUs (400) were included by systematic sampling. A pre-designed & pre-tested proforma was used for collection of data. The proforma was first prepared and then field tested. After that the final version of the proforma was prepared and used. The data collectors were trained and information was collected by personal interview after obtaining the written consent of IDUs. Data so collected were analysed with Epi info version 3.5.1

Results:

All the IDUs were males. About 27% (11) IDUs belonged to 35 to 39 years

age group .Median age of IDUs was 34.5 years. Almost half of IDUs had no formal education and about 33% (13) were educated up to primary level. Majority of IDUs were married and one third was unmarried. Majority earn their livelihood by working as house servant. Majority of them initiated drug injection practices in 25 to 29 years age group with median age of 25 years and almost 23% were into this practice in 15 to 19 years age group.

All the IDUs had heard the word HIV and AIDS and all of them could correctly explain the meaning of HIV positive and AIDS. All the IDUs knew that HIV /AIDS were infectious. 32(80%) IDUs believed that HIV/AIDS was curable and 10(25%) IDUs believed that there is a vaccine for HIV/AIDS whereas 6(15%) IDUs believed that there is no vaccine for HIV/AIDS and rest did not know. All the IDUs were tested for HIV once in life time, whereas 37 (92.5%) of them were tested in last 6 months.

Knowledge of HIV/AIDS was assessed among the IDUs and they were asked questions about routes of spread and multiple options were provided and it was found that sexual route was known to 28(70%), followed by vertical transmission 26(65%), infected needle and syringe route 24(60%) (Table-1) When asked about how the disease does not spread, responses obtained showed that by hand shake (28), by sharing bathroom (23) and by sharing clothes (20) HIV/AIDS does not spread was known to 70%, 57.5% and 50% respectively. HIV does not spread by mosquito bite was known to only 8(20%) IDUs. (Table-2) As regard to prevention of disease the knowledge of abstinence was highest, followed by consistent condom use, and refraining from unsafe sex. Using sterile needle and syringes prevent HIV/AIDS was known to only one third IDUs. (Table-1) Knowledge of HIV/AIDS among IDUs was associated with their age. Those less than or equal to 25 years were taken as young and above 25 years as adults. It was found that adult

IDUs were more aware about all the routes as compared to young IDUs, particularly vertical transmission and sexual route. However, association between the knowledge of vertical route and age of IDUs was significant (Odds ratio 0.15, p value < 0.05) (Table-1). Same way hand shake, sharing bathroom, staying and eating together does not spread HIV was also better known to them. Mosquito bite does not spread HIV was known to 8 adult IDUs and none of the young IDUs were aware of it. Abstinence and consistent condom use prevents HIV/AIDS was better known to adult IDUs. Strikingly knowledge about using sterile needle syringe prevents HIV was poorly known to IDUs.

Knowledge of HIV/AIDS was associated with regard to their duration of drug injection practice. Overall knowledge about transmission was more than 50% among IDUs and all these route were better known to IDUs with ≤ 10 years addiction as compared to >10 years addiction. It was found that 78% of IDUs with ≤ 10 years addiction knew infected needle syringe route for HIV transmission in contrast to 45% IDUs having more than 10 years addiction and this association was significant (OR 0.2 and p value 0.03) (Table-2). Considering other route by which transmission does not occur, handshake was better known among all others. Also adult IDUs were more aware as compared to young IDUs and those with short term addiction were also more aware except for myths related to sharing clothes and casual touch. Abstinence and consistent condom use are some of the way to prevent HIV/AIDS was known better to IDUs among all other measures. Adult IDUs had better knowledge about modes of prevention as compared to young IDUs. Those IDUs with long term addiction had good knowledge about preventive measure except for being faithful to partner. (Table-3)

28(70%) of IDUs were aware about STI, but only 25 (62.5%) could correctly

explain the term. All the IDUs knew that their partners should also take treatment when they have STI. 39 (97.5 %) IDUs used condom when they had infection or their partners had infection. 9 (22.5%) had visited STI clinic once in their life time and only 4 (11%) IDUs had visited STI clinic in last 6 months. On enquiring about the symptoms of STI, 27 (67.5%) IDUs mentioned vesicles, 25 (62.5%) urethral discharge and 20 (50%) genital swelling. A least responses were received by lower abdominal pain which is a common symptom of STI in females. (Table- 4). As far as the age of IDUs were concerned awareness of symptoms was better in adult IDU. When duration of injection practice among IDUs were compared for awareness about the STI symptoms it was revealed that overall awareness was higher among IDUs with ≤ 10 yrs addiction and in that also awareness about urethral discharge was highest, followed by vesicles, genital swelling and genital ulcer. However pruritis as symptom was better known to IDUs with ≤ 10 yrs addiction as compared to > 10 yrs addiction and this relationship was significant (OR 0.1, $p < 0.05$) (Table-4).

All IDUs knew about condom and all of them were having condom at the time of interview. 10 (25%) IDUs gave history of sexual exposure without the use of condom in last 1 year, thus exposing them to the risk of HIV/STI. Out of these 25%, 3 (30%) did not use condom as they were under the effect of drug. Rest gave reason of interference in pleasure and partner's opposition as reason for non-use. 28 (70%) IDUs perceived the possibility of contracting HIV/AIDS. 39 (97.5%) IDU said that they discussed HIV/AIDS with their partners. Among IDUs, adult IDUs were more knowledgeable about routes of transmission, how HIV does not spread and about modes of prevention and awareness of symptoms of STIs. Knowledge of all above things except for modes of prevention was also observed

higher among IDUs with short term addiction.

Discussion:

Our study found that all IDUs were males and 27% belonged to 35 to 39 years age group and their median age was 34.5 years. As per population council update majority of IDUs were males in both cities (Delhi and Imphal) with median age of 30 years⁴. Median age was 29 years in another study by Neilone Bertoni et al⁵ and a study in Georgia quoted 35 years as median age in IDUs.⁶ Chavan LB et al quoted median age of 33 years in IDUs⁷. Almost 50% of IDUs had no formal education similar to our study⁴. Majority were married and one third were unmarried and about half were married as per one study⁶ but contrary to this, one study reported that most IDUs were single (56.8%)⁵. Majority of them started drug injection practices at median age of 25 years, while in one study, for injecting drugs, the median age at first use was 19 years.⁶ All the IDUs were tested for HIV once in life time, while less than one third were ever tested for HIV as per another study⁶ and 37% were tested in Delhi and 98% were tested in Imphal⁴. All IDUs had heard about HIV/AIDS similar to our study⁶ and in Imphal 98% had heard of HIV/AIDS and around 75% in Delhi⁴. As per Chavan LB et al 97.7% of respondents knew that HIV could be transmitted by sharing needles and injecting equipment while our study observed that knowledge about this route for transmission of HIV among IDU was 60% while in contrast to these 99.4% IDUs knew needle sharing increases risk of HIV as per one study⁶.

Neilane Bertoli et al reported that majority of IDUs believed that HIV transmission may not occur through mosquito bite while in our study only 20% IDU shared the same feeling. Similarly to their finding 57.5% IDUs in our study believed sharing bathroom with a person with HIV/AIDS had no risk of acquiring HIV infection⁵.

Being faithful to one partner reduces the risk of HIV was known to 45% IDUs in our study whereas this knowledge was almost 93% in another study⁶. Using condom makes one safe was known to 62.5% IDUs in our study and this knowledge was higher in other study⁶

Chavan LB et al reported that 69% IDU had never used condom, whereas our study found 25% IDU had not used condom in last 1 year⁷. 30% IDUs of those not using condom admitted that they did not use it under the effect of drug and in a study by Ividity it was reported 9.0%⁶. We observed that 70% IDUs were aware about STI, but only 62.5% could correctly explain the term, in contrast to this NCASC and ASHA project in Kathmandu reported knowledge of STI among IDUs almost universal (98%). Most commonly cited genital symptoms of STIs were vesicles around genital (62.5%). Genital

ulcer was known to 45% in our study was known to 63% IDUs in our study whereas the project reported around 25%. Itching was known to around one fourth IDUs in that project and in our study it was slightly higher. This project reported that white discharge was known to 15% IDUs and it was 28% in our study. Swelling around genitals was known to about half of IDU in our study and it was around 20% in the project. Abdominal pain as a symptom was poorly known.⁸

Conclusion:

Knowledge about HIV/ AIDS is good but same is not reflected in testing for HIV. IDU though at increased risk of HIV due to needle sharing practices, the knowledge of the same is poor. Myths surrounding the HIV transmission are also prevalent. Using sterile needle and syringe protect against HIV is poorly known. Knowledge of STI symptoms is poor.

Table 1: Association of knowledge of routes of spread with age and duration of drug injection practices

Knowledge of routes of spread	Duration(years)		Age(years)	
	≤10 (n= 18)	>10 (n=22)	≤25 (n=15)	>25 (n=25)
1 Sexual route-28(70) OR(CI) (p value)	14 (77.8) 0.5(0.13-2.3) 0.3	14 (63.6) 2.72(0.28-25.7) 0.34	6 (40)	22 (88)
2 Blood route-23 (57.5) OR(CI) (p value)	9 (50) 1.75(0.49-6.2) 0.29	14 (63.6) 0.48(0.09-2.54) 0.32	3 (20)	20 (80)
3 Vertical transmission-26(65) OR (CI) (p value)	12 (66.7) 0.87(0.23-3.24) 0.5	14 (63.6) 0.15(0.02-0.91) 0.03	2 (13.3)	24 (96)
4 Infected needle & syringes-24 (60) OR (CI) (p value)	14 (77.7) 0.2(0.05-0.95) 0.03	10 (45.5) 1.84(0.31-10.91) 0.40	5 (33.3)	19 (76)

Table 2: Association of knowledge of how HIV/AIDS does not spread with age and duration of drug injection practices

Knowledge (%)	Duration(years)		Age(years)		
	≤10 (n=18)	>10 (n=22)	≤25 (n=15)	>25 (n=25)	
1 Hand shake-28 (70) OR (CI) (p value)	13(72.2) 0.82(0.21-3.23) 0.5	15(68.2) 1.08(0.17-6.57) 0.65	5(33.3)	23(92)	
2 Staying/eating together-17(42.5) OR (CI) (p value)	8(44.4) 0.86(0.24-3.04) 0.5	9(40.9) 2.051(0.39-10.70) 0.32	4(26.7)	13(52)	
3 Sharing clothes-20(50) OR (CI) (p value)	8(44.4) 1.5(0.42-5.24) 0.3	12(54.5) 0.70(0.13-3.65) 0.5	3(20)	17(68)	
4 Sharing bathroom-23(57.5) OR (CI) (p value)	10(55.6) 1.15(0.32-4.07) 0.5	13(55.1) 2.08(0.35-12.32) 0.35	5(33.3)	18(72)	
5 Swimming pool-9(22.5) OR (CI) (p value)	6(33.3) 0.31(0.06-1.50) 0.13	3(13.6) 0.52(0.05-5) 0.4	1(6.7)	8(32)	
6 Casual touch-11(27.5) OR (CI) (p value)	4(22.2) 1.63(0.39-6.81) 0.37	7(31.8) 0.38(0.04- 3.61) 0.3	1(6.7)	10(40)	
7 Mosquito bite-8(20) OR (CI) (p value)	5(27.8) 0.40(0.08-2.02) 0.23	3(13.6)	0	8(32)	

Table 3: Association of knowledge of modes of HIV/AIDS prevention

Knowledge about modes of prevention (%)	Duration(years)		Age(years)	
	≤10 (n=18)	>10 (n=22)	≤25 (n=15)	>25 (n=25)
Abstinence-27 (67.5)	11 (61.1)	16 (72.7)	4 (26.7)	23 (92)
OR (CI) (p value)	1.69 (0.44-6.43) (0.3)	0.57 (0.10-3.08) (0.4)		
Consistent condom use-25 (62.5)	11 (61.1)	14 (63.6)	4 (26.7)	21 (84)
OR (CI) (p value)	1.11 (0.30-4.02) (0.5)	0.76 (0.14- 3.99) (0.5)		
Faithful partner-18(45)	11 (61.1)	7 (31.8)	5 (33.3)	13 (52)
OR (CI) (p value)	0.29 (0.08-1.09) (0.06)	3.8 (0.64-22.86) (0.1)		
Avoid unsafe sex-20(50)	8 (44.4)	12 (54.5)	3 (20)	17 (68)
OR (CI) (p value)	1.50 (0.42-5.24) (0.3)	0.70 (0.13- 3.65) (0.5)		
Accept HIV tested blood-15 (37.5)	6 (33.3)	9 (40.9)	3 (20)	12 (48)
OR (CI) (p value)	1.38 (0.37-5.06) (0.4)	1.31 (0.25-6.87) (0.5)		
Use of Sterile needles& syringes 13(32.5)	6 (33.3)	7 (31.8)	1 (6.7)	12 (48)
OR (CI) (p value)	0.93 (0.24-3.52) (0.5)	0.29 (0.031-2.71) (0.2)		

Table 4: Association of knowledge of STI with age, duration of injecting practice.

Symptoms of STI (%)	Age(years)		Duration(years)	
	≤25 (n=18)	>25 (n=22)	≤10 (n=15)	>10 (n=25)
1 Genital ulcer (18) (45%)	3 (16.7)	15 (68.2)	10 (66.7)	8 (32)
OR	0.90		0.45	
(CI)	(0.17-4.66)		(0.12-1.63)	
(p value)	(0.6)		(0.18)	
2 Genital swelling (20) (50%)	3 (16.7)	17 (77.3)	10 (66.7)	10 (66.7)
OR	0.70		0.66	
(CI)	(0.13-3.65)		(0.19-2.33)	
(p value)	(0.5)		(0.2)	
3 Urethral discharge (25)(62.5%)	6 (33.3)	19 (86.4)	12 (80)	13 (52)
OR	4.105		0.81	
(CI)	(0.44-38.23)		(0.21-3.03)	
(p value)	(0.19)		(0.5)	
4 Pruritis (11) (27.5%)	4 (22.2)	7 (31.8)	9 (60)	2 (8)
OR	4.95		0.10	
(CI)	(0.89-27.48)		(0.01-0.55)	
(p value)	(0.07)		(0.005)	
5 Lower abdominal Pain (2) (5%)	0	2 (9)	0	2 (8)
OR(CI)				
(p value)				
6 White discharge (11) (27.5%)	1 (5.5)	10 (45.5)	5 (33.3)	6 (24)
OR	0.38		0.97	
(CI)	(0.04-3.61)		(0.24-3.93)	
(p value)	(0.36)		(0.62)	
7 Vesicles (27) (67.5%)	6 (33.3)	21 (95.5)	10 (66.7)	17 (68)
OR	3.42		2.72	
(CI)	(0.36-3.19)		(0.69-10.63)	
(p value)			(0.13)	

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Original article

Trend of Tobacco and other substance habits among three generation in urban slums of Ahmedabad Municipal Corporation.

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Abstract:

Introduction: Habit of tobacco and other substances is believed to be affected by similar habits in different generations.

Objectives: 1) To find out the proportion of tobacco & other substance habits and its influencing factors. 2) To find out trend of such habits in three generations. 3) To increase awareness in community regarding relationship between such habits and different cancers.

Methodology: Community based cross sectional study was conducted at three slum areas of Ahmedabad Corporation during August-November, 2011. A standardized proforma was prepared which included details of socio-demographic variables, tobacco & other habits etc. Subjects were selected from house to house survey. Total of 300 individuals from 167 houses were selected.

Results: Population of 878 from 167 houses included 462(52.61%) males and 416(47.38%) females. Among 300 individuals with habits, there were 237(79%) males and 63(21%) females. According to modified Prasad's classification 97(32.3%) individuals belong to class3 and 95(31.7%) belong to class4. Majority 116(38.7%) individuals were of 30-55year (middle aged). Around 41(13.7%) Individuals were illiterate. Preferred habits were Guthka (44.7%), followed by Tobacco-lime (41.7%), Bidi (34.7%), Alcohol (41.3%) and snuffing (25%). Friends/peers (43.3%) followed by parents/guardian (29%) were the commonest influencing factors.

Conclusion: Significant gender difference observed among substance users. Literacy

rate was high among youth and high socioeconomic class. Gutka, Cigarette, and Alcohol habits were significantly associated with youth (<30year) whereas usage of Khaini and Bidi was significantly associated with elder people (>55year). Overall smokeless tobacco was common in urban slum.

Key words: Tobacco, Generation, Habits

Introduction:

Globally tobacco is estimated to have killed 100 million people in the 20th century and continues to kill 5.4 million people every year and this figure is expected to rise to 8 million per year by 2030, 80% of which will occur in the developing countries.¹ Tobacco is estimated to lead 1 in 5 male deaths and 1 in 20 female deaths among over age 30.² India is second largest consumer of tobacco in the world.³ In India, tobacco - attributable mortality is estimated to increase from 1% of total mortality in 1990 to 13% by 2020.⁴

Tobacco is used in different forms and the health effects are seen irrespective of the form in which it is used.^{5,6} Smokeless tobacco is found to be as addictive and harmful as smoking yet more difficult to quit.⁷ Smokeless tobacco, especially in the form of chewing has been associated with various oral diseases including cancers and adverse reproductive outcomes.⁸ Tobacco chewing is prevalent in all parts of the world and all age groups, though it varies in its extent. In youth, the influence of friends and peers take on greater importance, but research clearly demonstrates the continued significance of parents in shaping the behaviours, choices

and habits of youth as they face the challenges of growing up.⁹ Urban slum population not only has high proportion of such habits but is also deprived of much needed benefits of preventive health education. So, the present study was carried out in urban slums of Ahmedabad to study the proportion of tobacco habits in different age groups and to check its correlation with such habits in adjacent generations.

Aims and Objectives:

1. To find out the proportion of tobacco & other substance habits and its influencing factors in study group.
2. To find out trend of tobacco & other substance habits in three generations among the study group.
3. To increase awareness in the community regarding relationship between tobacco & other substance habits and different types of cancers.

Materials and Methods:

A Cross sectional community based study was conducted in three slum areas of Ahmedabad Municipal Corporation (AMC) area. The study was conducted from August to November, 2011. Sampling technique was purposive. Proforma was prepared which included details of various socio demographic variables e.g. age, sex, socioeconomic status, education level etc. It also includes information regarding tobacco & other substance habits and related influencing factors among study group. As the proforma was specially prepared for the study, field testing was done and necessary modifications were applied to make it standardized and uniform. A total of 300 individuals with tobacco & other substance habits were purposively selected from 167 houses. Majority (276, 92%) among 300 individuals were currently staying in these 167 houses, while others (24, 8%) who belong to these families but residing elsewhere or recently separated (within one year period) for one or other reason.

Information was primarily assessed by directly asking the individuals about their tobacco & other substance habits after their informed verbal consent. Information was also sought from other family members, if any individual with such habit/s was not available at the time of study. Analysis was done by using appropriate statistical software applying suitable statistical tests.

Results:

Out of 878 family members from 167 houses, 462 (52.61%) were males and 416 (47.38%) were females. Among 300 individuals, significantly higher number of males (237, 79%) had tobacco and other substance habits as compared to females (63, 21%) (Chi-square value: 127.2, $P < 0.0001$). Out of 300 individuals, 41 (14%) individuals were illiterate. Majority (114, 38%) individuals were studied up to secondary level followed by (90, 30%) up to primary level and (55, 18%) up to higher secondary level. According to modified Prasad's classification, socioeconomic class of families showed that majority belonged to class 3 (97, 32.3%) followed by class 4 (95, 31.7%), class 5 (67, 22%), and class 2 (41, 14%). Age distribution showed that majority (116, 38.7%) were of 30-55 year (middle aged) followed by elderly >55 years (94, 31.3%) and youth <30 years (90, 30%). (Table- 1) Comparison of education status between youth & elder people and different socioeconomic class showed significant difference. (Table- 2) Pattern of tobacco and other substance habits were categorized in three groups (Table- 3) which are (a) those who had recently (within 6 months) developed habits (b) those who had habits in past (before 6 months) but had given up and (c) exclusively both (Past habit of >6 months which is also present currently). Most common oral tobacco habits were Gutkha (44.7%) followed by Khaini (41.7%). Among smoked tobacco, Bidi users (34.7%) were more common than cigarette users (24%). Among other substance

habits, alcohol usage (41%) was highest. In snuffing habit gender difference shows that out of total 63 females having any substance habits, 37 females were having snuffing habits whereas for males snuffing was present only in 19 out of 218. Snuffing habit was significantly associated among females (Chi-square value: 84.30 and P value: <0.0001). Regarding the influencing factors for tobacco and other substance habits, majority were associated with friend circle (peer groups) (130, 43.3%) followed by parents/guardian (87, 29%) and media (44, 15%). No specific influencing factor was mentioned by 39 (13%) individuals. The trend of Tobacco and other substance habits and related influencing factors among youth and elder people is described in Table- 4.

Discussion:

In the present study the proportion of tobacco and other substance habits was 34% (300 individuals out of 878 from 167 houses). As per nationwide survey in India, prevalence of tobacco use in any form among male was 23.2% to 69.3% and among female was 4.0% to 50%.¹¹ Similar gender differences was also found in the present study & it was significantly higher among males as compared to females. Overall smokeless tobacco prevalence in India is 35-40%.⁷ Different proportions of tobacco and other substance habits is shown in Table-1. Majority had mixed pattern of tobacco consumption. As per census 2011, Literacy rate of India and Gujarat was 74.04% & 79.3% accordingly. In the present study literacy rate was at higher side (86%), might be due to data from the urban area. Youth and higher socioeconomic class shows higher education as compare to elder people and lower socioeconomic class (Table- 2). This justifies and explains an increasing level of education in younger generations as compared to past and a clear association of socioeconomic development with the education.

Tobacco and other substance habits are associated with various adverse

consequences according to their types of usage by individuals e.g. smokeless tobacco including Guthka, Khaini, Pan-masala, and Snuffing are associated with benign oral lesions to various types of malignant oral cancers.⁹ Tobacco usage in smoking forms e.g. Cigarette, Bidi and Huka etc. is linked with various interstitial lung diseases and lung cancers.⁹ Alcohol is associated many benign to malignant type of liver diseases.¹⁰ Proportions of different forms of tobacco and other habits are given in Table-3. The Gutkha was most common form of oral tobacco use whereas Bidi was commonest form of smoked tobacco consumption. Alcohol addiction was also parallel with the tobacco usage in the urban slums. As seen from table 4, top five leading habits among youth was Gutkha, Alcohol, Cigarette, Bidi and Pan-masala, whereas among elder people it was Khaini, Bidi, Pan-masala, Bhang and Alcohol. This shows changing trend of tobacco consumption. Now Cigarette smoking is taking over the Bidi as smoked tobacco consumption. Similarly, Gutkha is taking over the khaini in the smokeless tobacco consumption. Alcohol is also showing a significantly increasing trend. These are probably explained by a multitude of social factors including availability, advertising and marketing & social trend. This may also be attributed to higher social status even among different substance abuse as well e.g. a person who smokes cigarette is considered with higher social status among substance abusers. The proportion of other habits such as pan masala, Snuffing, Ganja-Bhang and Huka all have decreased but the difference is statistically not significant (Table-4). Regarding Influencing factors for such habits, friends and media were significantly associated with youth (<30year) as compare to elder people (>55yr). Community based awareness campaign is emphasized for behaviour change among youth of slum area.

Table- 1: Socio-demographic profile of Tobacco and other substance users.

Socio-demographic profile (N=300)	No.	Percentage
Gender		
Male	237	79
Female	63	21
Age distribution (Generation)		
Youth (<30 years)	90	30
Middle age (30-55 years)	116	38.7
Old (>55 years)	94	31.3
Socio-economic class status		
Class 2	41	14
Class 3	97	32.3
Class 4	95	31.7
Class 5	67	22
Educational status		
Illiterate	41	14
Primary	90	30
Secondary	114	38
Higher secondary	55	18
Tobacco and other substance habits		
Only Smokeless tobacco users	73	24.3
Only Smoked tobacco users	12	4.0
Only other substances users	4	1.3
Mixed pattern observed	211	70.3

Table- 2: Comparison of education status with extremes of ages and with various socio- economic classes among tobacco and other substance users.

Generation (N=184)	Illite rate	Liter ate	χ^2	P value
Youth (<30 years)	7	83	5.86	0.016
Old (>55 years)	19	75		
Socio-economic class (N=300)	Illite rate	Liter ate	χ^2	P value
Class 2	4	37	10.24	0.017
Class 3	9	88		
Class 4	11	84		
Class 5	17	50		

Table-3: Pattern of tobacco and other substance habits.

No	Substance habits* (N=300)	Only current users (<6 month)	Only past user (before 6 month)	Exclusively Both (current as well as past)
1	Guthka (44.7%)	78	36	20
2	Khaini (41.7%)	33	11	81
3	Pan-masala (39%)	24	47	45
4	Snuffing (25%)	10	9	56
5	Cigarette (24%)	37	23	11
6	Bidi (34.7%)	20	26	58
7	Huka (17%)	13	32	6
8	Ganja-Bhang (27%)	16	41	24
9	Alcohol (41%)	19	51	54

* Study subjects may have more than one habit.

Table- 4: Comparison of various types of substances habit and related influencing factors in two (youth & old) generations. (N=184)

Substance habits*	Youth (n=90)		Elderly (n=94)		Chi-square	P value
	Number	Percentage	Number	Percentage		
Guthka	62	68.8	19	20.2	44.20	<0.0001
Khaini	28	31.1	63	67.0	23.71	<0.0001
Pan-masala	31	34.4	37	39.4	0.477	0.48
Snuffing	15	16.7	26	27.6	3.21	0.073
Cigarette	36	40.0	14	14.9	14.64	0.0001
Bidi	34	37.8	61	64.9	13.53	0.0002
Huka	14	15.5	25	26.6	3.35	0.067
Ganja - Bhang	19	21.1	32	34.0	3.83	0.05
Alcohol	46	51.1	27	28.7	9.63	0.0019
Influencing factors	Youth (n=90)		Elderly (n=94)		Chi-square	P value
	Number	Percentage	Number	Percentage		
Friends	37	41.1	24	25.5	5.04	0.025
Parents	13	14.4	41	43.6	18.87	<0.0001
Media	29	32.2	09	9.6	14.39	0.0001
self-started	11	12.2	20	21.3	2.69	0.10

* There might be more than one habit among individuals.

Summary:

Tobacco and other substance habits were more common in males than in females (except for snuffing habit). Literacy rate was significantly higher in younger generation and in high socioeconomic class as compare to older generation and low socioeconomic class. Guthka, Cigarette, and Alcohol habits were significantly associated with youth (<30year) whereas usage of Khaini (mixture of tobacco & lime) and Bidi was significantly associated with elder people (>55year). Overall smokeless tobacco was common in urban slum. Regarding Influencing factors, friends and media were significantly associated with youth.

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Original article

A study of prevalence of primary dysmenorrhea in young students - A cross-sectional study

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Abstract

Background: Menstrual pain without organic pathology is considered to be primary dysmenorrhoea. The onset of primary dysmenorrhoea is usually at or shortly after (6 to 12 months) menarche, when ovulatory cycles are established. The true incidence and prevalence of primary dysmenorrhea are not clearly established in India. A dysmenorrhea incidence of 33.5% among adolescent girls in India was reported by some researchers.

Objective: to find out prevalence of primary dysmenorrhea in young females.

Methods: This cross sectional study was conducted at Nursing College, situated in campus of largest tertiary care hospital in central and south Gujarat. Study was conducted by Department of Obstetrics and Gynecology of the institute. All students of first year (n=116) were selected and asked about their menstrual history, menstrual pain and associated symptoms through written questionnaire. Per abdomen and ultrasonographic examination was carried out for those having dysmenorrhea by gynecologist. Any abnormal finding was noted and that student was excluded.

Statistics: chi square, chi square for trends, fisher exact test and prevalence rate.

Results & Conclusion: out of 116 students, 52 (45%) had primary dysmenorrheal and majority (46) of these, had regular menstrual cycles. BMI and ovarian volume did not demonstrate any significant association with presence of dysmenorrhea and regular menstrual cycles.

Keywords: primary dysmenorrhea, young girls, prevalence rate, India

Introduction:

Exact origin of the word dysmenorrhoea is not known, but it has been mentioned in the ancient literature world-wide¹ Vivid description and social stigma associated with menstruation related mood and behavioural changes date back to Hippocrates, the Talmud and the Bible. In spite of the fact of existence of painful menstruation in ancient literature, it was only in the last half of past century when dysmenorrhea has been accorded impartial scientific evaluation.

Dysmenorrhoea refers to the occurrence of painful menstrual cramps of uterine origin. It is a common gynaecological condition with considerable morbidity. The aetiology of primary dysmenorrhoea has been the source of debate². Primary dysmenorrhea refers to dysmenorrhea without evident pelvic pathologies^{3,4}. The initial onset of primary dysmenorrhoea is usually at or shortly after 6 to 12 months of menarche, when ovulatory cycles are established. Duration of the pain is usually 8 to 72 hours and is usually associated with menstruation. Identification of dysmenorrhoea and associated features like vomiting, giddiness, mood changes was done around middle of 19th century⁵. The true incidence and prevalence of primary dysmenorrhea are not clearly established in India. A dysmenorrhea incidence of 33.5% among adolescent girls in India was reported by Nag⁶ George and Bhaduri found dysmenorrhea to be a common problem in India with prevalence

of 87.87%⁷. Prevalence of dysmenorrhea among the students in a college in western Turkey was found to be 72.7% (n = 453)⁸. Thus we conducted the study to find out prevalence rate of primary dysmenorrhea in young females and to study associated clinical markers of dysmenorrhea.

Materials and Methods:

This cross-sectional study was conducted by the Department of Obstetrics and Gynaecology, Sir Sayajirao General Hospital (SSGH), Vadodara, Gujarat, India for a period of six months. The study proposal was cleared from Institutional Review Board (IRB) of the institute.

The age group of these students varied from 18 to 21 years. After obtaining consent, all the female students (total 116) in first year of the School of Nursing (in the SSGH) were given an open-ended questionnaire regarding their menstrual history. All the items in the questionnaire were first explained by the researcher conducting the study in local language.

Then they were asked to respond to it in a given time period. Their Body Mass Index (BMI) was measured by formula $\text{Weight (Kg)}/\text{Height}^2 \text{ (meter)}^2$. Asian criteria for BMI have been taken in analysis. <18, 18-22.99 and >23 were taken as cut off for underweight, normal and overweight (9).

They were also asked about presence of any associated symptoms like nausea/vomiting, headache, dizziness or diarrhoea. Severity of pain and other associated symptoms were noted on 3 point scale as mild, moderate or severe. Privacy and confidentiality was maintained throughout the study.

Per abdominal examination and trans-abdominal ultrasound (USG) was done for those having dysmenorrhea. Ovarian volume was noted for all of them. Four students with ovarian volume >10cc were excluded and finally 52 students were labelled as cases of primary dysmenorrhea. The details were entered into Microsoft excel spread sheet (version 2007) and data

was statistically analysed using Epi Info software (version 6.04) (10).

Results:

Total 56 out of all 116 students, had complaint of menstrual pain. Out of these, 52 had primary dysmenorrhea (Table-3). So prevalence of primary dysmenorrhea in our study was 45%.

Table 1 shows clinical characteristics of the study population. Mean age of menarche was 13 and 13.5 years, which were almost similar in the students of both groups (With and without primary dysmenorrhea respectively). Similarly, mean BMI was 21 and 21.5 kg/m² which were almost similar in the students of both groups.

Figure 1 shows that out of 100 students with regular menstrual cycle, 48 had dysmenorrhea and 52 hadn't. It also shows that out of 16 students with irregular menstrual cycle, 8 had dysmenorrhea and 8 hadn't. By applying chi square test (Chi square value = 0.0221), it can be concluded that there is no relationship between dysmenorrhoea and menstrual cycle regularity (p=0.88).

Table 2 shows that 2, 48 and 6 students who were suffering from dysmenorrhea were underweight, normal weight and overweight respectively. Table 2 also shows that 3, 50 and 7 students who weren't suffering from dysmenorrhea were underweight, normal weight and overweight respectively. Thus there is no relationship between BMI and presence of dysmenorrhoea (p= 0.86) by applying Chi square for trends= (chi square value = 0.029).

Table 3 shows that 46 and 2 students who had regular menstrual cycle had normal (10 cc or less) and high (>10 cc) ovarian volume respectively. It also shows that 6 and 2 students who had irregular menstrual cycle had normal (10 cc or less) and high (>10 cc) ovarian volume respectively. By applying Fisher exact T test, it was found that there isn't any relationship between ovarian volume and menstrual cycle regularity (p=0.119).

Figure 2 shows the distribution of students on 3 point Scale for Pain in the two groups. It shows that in 18% of students dysmenorrhoea was mild, moderate in 40% and 42% of students suffered from severe dysmenorrhoea.

Table 4 shows presence of other symptoms in the study population. Nausea/vomiting, Headache, Dizziness/Giddiness, Diarrhoea were found in 5, 3, 7 and 2 students.

Discussion:

Mean age of menarche in our study was 13 years in students having dysmenorrhea. Similar findings were observed in study conducted by Gulsen Eryilmaz et al, Demr SC et al; Vicdan K et al in Turkey^{11,12,13}. Dambhare DG et al found that Mean ages of menarche were 13.51 years in their cross sectional study conducted on 1100 school adolescent girls in district Wardha, Central India¹⁴.

In our study, dysmenorrhoea occurred in students with both regular and irregular cycles (figure 1). In a recent study Begum J et al found no association between menstrual cycle regularity and presence of dysmenorrhoea¹⁵. Hong-Gui Zhou et al in a study of 2640 students found that dysmenorrhoea was unrelated to the irregularity of menstrual cycles¹⁶. In another study, Sundell et al found that severity of dysmenorrhoea was not associated with length of menstrual cycles¹⁷. Tomoko et al found that dysmenorrhoea scores in students with irregular menstruation were significantly higher than those with regular menstruation¹⁸. Thus findings of this one study did differ from that of ours.

Table 1 and 2 shows that dysmenorrhoea is not affected by height and weight of the subjects. Our results are supported by Anil K Agarwal and Anju Agarwal. They found a negative correlation between dysmenorrhoea and the general health status as measured by body surface area in a study conducted in nine hundred and seventy adolescent girls

of high schools of Gwalior¹⁹. Sundell et al also found that severity of dysmenorrhoea was not affected by height and weight of subjects.¹⁷

Table 3 shows that there is no relationship between ovarian volume and menstrual cycle regularity. K Lakhani et al found that increased ovarian volume is associated with Polycystic Ovarian Syndrome but it can be found in asymptomatic women with regular cycles²⁰.

Prevalence of dysmenorrhea in our study was 48%. There had been few studies in India. A study from New Delhi, India showed that premenstrual syndrome and dysmenorrhea were perceived as the most distressing symptoms associated with menstruation by 67% and 33% unmarried undergraduate medical students respectively (21). Dambhare DG et al found that prevalence of dysmenorrhea and PMS was 56% in their cross sectional study conducted on 1100 school adolescent girls in district Wardha, Central India (11). Unsal A et al had found out that prevalence of dysmenorrhea among college going students in western Turkey was 72.7% (n = 453). Prevalence rates of dysmenorrhea were found to be 72.7% in Turkey, 74.5% in Malaysia, 72% in Ethiopia and 53.3% in Nigeria (8, 22-24). Thus, in a nutshell, prevalence of dysmenorrhea in young female students is high and this finding of our study is in concordance with others.

Pain is extremely subjective symptom and it has been very difficult to quantify pain (25). Researchers have, therefore, found out a way to measure pain by various scoring systems like VAS (26). Depending on pain score obtained on VAS, pain was divided into mild, moderate and severe pain and thus it is called 3 point scale. In our study, it was revealed that 18%, 40% and 42% of students had mild, moderate and severe pain (dysmenorrhoea) respectively.

In a study conducted by Ortiz MI (2010) in 1539 students of Mexican

University, they concluded that dysmenorrhoea was mild in 36.1%, moderate in 43.8% and severe in 20.1%²⁷. Alaettin Unsal et al conducted a study on 623 female students in Turkey University and found that 66.6% of students were having moderate and severe dysmenorrhoea⁸.

Dysmenorrhea is usually associated with some other symptoms like nausea, vomiting, headache, dizziness, diarrhea etc. In our study, prevalence of such associated symptoms was lower. Prevalence of Nausea & vomiting, Headache, giddiness, diarrhoea was 9%, 5%, 12.5% and 3.5% respectively.

In a study conducted by Gulsen Eryilmaz et al had found out that prevalence of nausea & vomiting, diarrhea, dizziness and headache was 12.2%, 8.1%, 8.1% and 17.7% respectively among the school going students of 26 high schools located in Erzurum, Northeastern Turkey¹¹. Dambhare DG et al found that the most common premenstrual symptom was headache (26.74% students) in their cross sectional study in district Wardha, Central India¹¹

Thus prevalence of the dysmenorrhea is high in our study population. Such high prevalence makes dysmenorrhea a significant public health problem among young students that demands some attention from policy makers.

Table 1: Clinical characteristics of all nursing students

	Dysmenorrhoea	
	Present (N=56)	Absent (N=60)
Mean age of menarche(years)	13	13.5
Mean BMI (Kg/m ²)	21	21.5

Table 2: relationship between dysmenorrhoea and BMI

BMI (Kg/m ²)	Dysmenorrhoea	
	Present (N=56)	Absent(N=60)
<18	2	3
18-22.99	48	50
>23	6	7

Chi square for trends= 0.029. p value = 0.86.

Table 3: Relationship between ovarian volume and menstrual cycle regularity among students having dysmenorrhea

Ovarian Volume	Regular cycles (n=48)	Irregular cycles (n=8)
Normal (< or=10cc)	46	6
Increased (>10cc)	2	2

Fisher exact test. p value = 0.09.

Table 4: presence of other associated symptoms among students having dysmenorrhea

Associated symptoms	Present	Absent
Nausea/vomiting	05	51
Headache	03	53
Dizziness/Giddiness	07	49
Diarrhoea	02	54

Figure 1: Relationship between dysmenorrhoea and menstrual cycle regularity

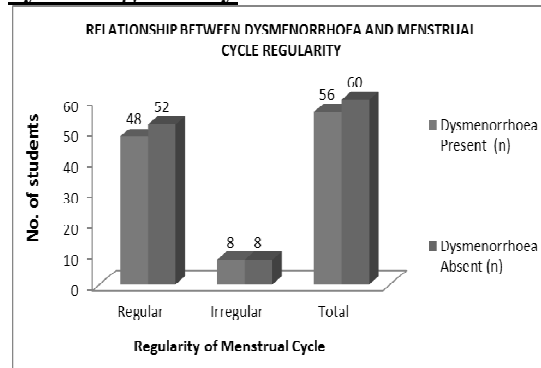
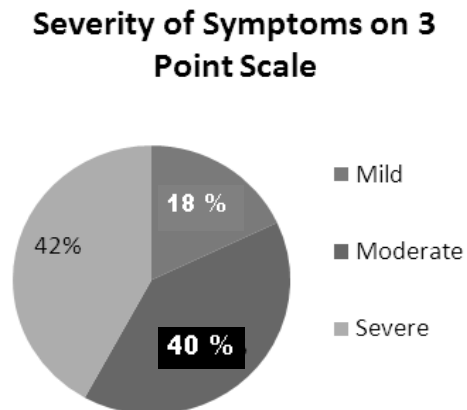


Figure 2: Severity of Symptoms on 3 Point Scale



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Permissions from the institutional review board, head of nursing college and medical superintendent of the hospital were obtained prior to initiate the study.

Original article

A study on assessment of nutritional and immunization status of under-five children in urban slums of Jamnagar city, Gujarat.

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Abstract:

Background: Malnutrition is very rampant in India. About 47 per cent of under-five children are malnourished. Malnutrition is a leading cause of childhood mortality and morbidity as well as permanent impairment of physical and possibly mental growth of survived children.

Objective: To find out the prevalence of under-nutrition, to identify various demographic and socio-economic risk factors associated with under-nutrition and to assess various aspects of nutritional and immunization status of children aged between 1 and 5 years of age living in urban slums of Jamnagar city.

Design: It is a cross-sectional, population based, descriptive study conducted in urban slums of Jamnagar Municipal corporation area, in August 2008 to October 2010. The study samples were children aged between 1 and 5 years of age. Total sample size was 450.

Sampling Technique: 30 cluster sampling technique (15 children per cluster)

Results and Conclusion: We observed that prevalence of malnutrition was 54% among under-five children, of which half of the children were in grade-I and grade-II. We also observed that prevalence of malnutrition was higher in female children, mothers with low literacy levels, and belonging to lower socio-economic class.

Recommendations: Service delivery component of RCH and other child health programmes needs to be strengthened

further, especially in urban slums, to improve nutritional status of under-five children. Raising female literacy will also improve their social status and reduce female child discrimination, and thereby help building malnutrition free India.

Key words: under-five, urban slum, malnutrition, immunization, social class

Introduction:

Children are the most important assets of our country. Childhood and maternal under-nutrition is currently the single leading cause of the global burden of under-nutrition. One in every three malnourished children of the world lives in India.¹ India also contributes to the highest number of deaths among under-fives in South East Asia region and one-fifth of under five deaths worldwide.² At least half of Indian infant deaths are related to malnutrition, often associated with infectious diseases, which are mostly vaccine preventable diseases (VPDs).³ Nutritional problems like Protein Energy Malnutrition (PEM), Anaemia, and Vitamin-A deficiency continues to be major problems in Indian children. These nutritional deficiencies adversely affect the health and development of children and contribute to high level of morbidity and mortality in the developing countries like India.⁴ There are many national programmes in India, like RCH programme, IMNCI, ICDS scheme, Mid-day Meal programme etc., but still 47% of children under five years in India are malnourished.⁵ This study is an attempt to

find out prevalence of malnutrition and assess the nutritional and immunization status of under-five children of urban slums areas.

Materials and Methods:

The present study is a cross-sectional study conducted in urban slums of Jamnagar Municipal corporation area, from August 2008 to October 2010. The study samples were children aged between 1 and 5 years of age.

Based on the national prevalence of protein energy malnutrition, which was 47%⁵, the sample size of the study was calculated using the Epi-info with relative precision of 10% and confidence interval of 95%. Thus, using the formula, $N = (1.96)^2 \times PQ/e^2$, where N is total sample size required, P is prevalence of protein energy malnutrition (47%), Q is 1-P (53%), and e is relative precision (10% of P).⁶ Thus, total sample size would be 433. To make it round-off, we included total 450 children of age 1-5 years.

Sampling Technique

As per the list of urban slum areas of Jamnagar city obtained from Municipal Corporation office, slum areas were selected by using 30 cluster sampling technique. From each cluster 15 children were selected randomly.

The study was carried out by undertaking house to house visits of the area of each cluster. From a random direction in each cluster, study was started by asking the family if there was a child between 1-5 years in the house. Every child between 1-5 years was included in the study till the sample size of 15 was complete in each cluster.

Data were collected in a predesigned and pretested Performa by interviewing mothers of children 1-5 years of age after obtaining signed informed consent from the respondents. In case of working mothers, the family member present in the family at the time of visit was interviewed. Mothers were asked to give details of the immunization status, birth history etc. Mothers were asked to

show immunization card to confirm vaccination status. If not available, then verbal information from the mother is collected.

Each child was subjected to anthropometric and clinical examination. Nutritional status of children was measured by Gomez classification.⁷ Socio-economic status was measured by Modified Prasad's Classification.⁸

Data were entered and analyzed using Microsoft Excel spreadsheet for Windows 7.

Results:

The study found that the prevalence of malnutrition was 54%, of which half of them belonged to grade-I and grade-II. Majority of children (74.45%) were Hindus, while 23.55% were Muslims. Majority of deliveries (72.44%) were conducted in a hospital, whereas only 27.56% children were born at home. About half of children belonged to nuclear family and half to joint family. The details about the demographic variables were given in Table No.1 and 2.

Discussion:

In our study, age distribution of under-five children were almost equal in different age group (Table-1), each age group catered about one-fourth of the children. About 54.22% children were males and 45.78% were females.

Mishra et al in 2001 also observed almost equal distribution of children in different age groups.⁹ It was 17.50% in age group in 0-1 year, 19.23% in 1-2 years, 18.65% in 2-3 years, 22.89% in 3-4 years and 21.73% in 4-5 years.

A study conducted in 2003 by Anita Khokhar and S. Singh¹⁰ found in their study a higher percentage of male children (58.6%) than females (41.4%). Awasthi. S and Pande.VK (1997)¹¹ also found in their study a higher percentage of male children (51.70%) than females (48.30%)¹¹. Same observation was noted by Bhalla et al in the year 1997.¹²

This study found that about 74.45% children were Hindu, while 23.55% were

Muslims. Yadav RJ and Singh.P (1999)¹³ had similar observations. They found that 91.80% of children were Hindu, 7.50% Muslims and 0.50% other religions (Sikh, Christian). Anita Khokhar and S. Singh (2003) also found in their study found 91% of children to be Hindu, 5.2% Muslims and 3.8% to other religions.¹⁰

In this study, overall literacy status of mother was 57.33%. Out of them, 37.56% were educated up to primary schooling, 17.11% had completed their secondary schooling. Only 12 (2.66%) mothers were educated to higher secondary or higher level.

Different level of literacy amongst mothers in various studies and present study is because of different geographical locations. Yadav R.J and Singh.P (1999)¹³ in their study had a higher level of illiterate mothers i.e. 56.40% but also had a higher percentage of mothers (27.30%) having secondary or higher level of education. Biswas et al (1999)¹⁴ also had a higher percentage of illiterate mothers i.e.63.49%. Kadam et al (2001)¹⁵ had a similar percentage of mothers (48.51%) being illiterate.

Majority of mothers in this study, i.e. 85.78% were housewives. Mothers working as labourer and agricultural work were 8.44% and 0.22% respectively. Only 5.56% mothers were serving either government or private sector. Almost similar observation was seen in a study by Hussain TM (1994)¹⁶ who found 88% of mothers to be housewives. Deb SK (1998)¹⁷ also found 48.27% of mothers being housewives.

Socio-economic status is one of the important determinant of health and well being of children. Majority of families (42.89%) belonged to socio-economic class IV, followed by socio-economic class-III (28.44%) and Class V (17.43%). Biswas et al (1999)¹⁴ had similar observations who found maximum number of children i.e. 39.54% from social class IV followed by 27.35% and 25.28% from social class V and III respectively. Hassan

et al (2001)¹⁸ in their study also found higher percentage of children belonging to lower socio-economic classes.

Out of 450 children, 338 (75.11%) were fully immunized, 60 (13.33%) were partially immunized and 52 (11.56%) were not immunized at all. Yadav RJ and Singh P (1999)¹³ found 60.8% of children being fully immunized. Bhatia et al (2004)¹⁹ in slums of Chandigarh found 58.66% of children being fully immunized 30.70% were partially immunized and 27.7% unimmunized.

The study revealed prevalence of malnutrition which was 54% among children between 1 and 5 years of age. Of them, majority of them were in malnutrition grade-I (26.22%), followed by grade-II (21.33%) and grade-III (6.45%). It was also observed that prevalence of malnutrition was higher in female children compared to male children. This difference was found statistically significant.

Dwivedi et al in 1992²⁰ and Ray et al in 1996²¹ also observed higher prevalence of malnutrition among female children compared to male children. Bhalani KD and Kotecha PV (2002)²² found prevalence of malnutrition to be 41.00% in grade I, 20.00% in grade II and 02.00% in grade III in their study.

Conclusion:

We observed that prevalence of malnutrition was 54% among children aged between 1 and 5 years of urban slum areas of Jamnagar city. Majority of children were in grade-I and II. We also observed that prevalence of malnutrition was higher in female children, mothers with low literacy levels and belonging to lower socio-economic class.

Table . 1. Demographic Characteristics Study Participants and their association with malnutrition.

Demographic Variable	Malnutrition Present No. (%)	Total No. (%)	Chi-square value (p-value)
Age Group			
1-2 years	74 (61.58)	121 (26.89)	Chi square =3.54 p>0.05
2-3 years	58 (51.33)	113 (25.11)	
3-4 years	63 (52.50)	120 (26.67)	
4-5 years	48 (50.00)	96 (21.33)	
Total	243 (54.00)	450 (100)	
Sex			
Male	117 (47.95)	244 (54.22)	Chi-square =7.32 P<0.05
Female	126 (61.16)	206 (45.78)	
Total	243 (54.00)	450 (100)	
Literacy Status of Mother			
Illiterate	109 (56.77)	192 (42.67)	Chi-square =13.92 P<0.05
Primary	101 (59.76)	169 (37.56)	
Secondary	30 (38.96)	77 (17.11)	
Higher Secondary	3 (25.00)	12 (2.66)	
Graduate and above	0 (0.00)	0 (0.00)	
Total	243 (54.00)	450 (100)	

Figure 1. Distribution of under-five children according to their nutritional status.

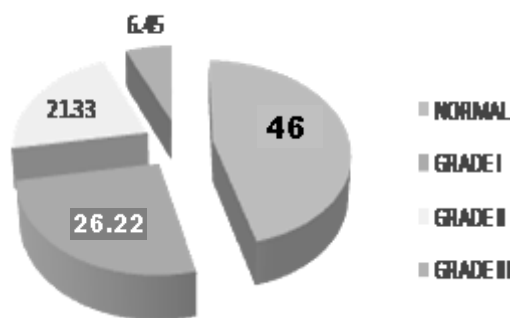


Table 2. Demographic characteristics of Study Participants and their association with malnutrition.

Demographic Variable	Malnutrition Present No. (%)	Total No. (%)	Chi-square (p-value)
Occupation of Mother			
House wife	212 (54.92)	386 (85.78)	Chi-square =4.79 p>0.05
Service	9 (36.00)	25 (5.56)	
Laborer	22 (57.89)	38 (8.44)	
Agriculture	0 (0.00)	1 (0.22)	
Total	243 (54.00)	450 (100)	
Socio-economic Status			
Class-I	1 (25.00)	4 (0.89)	Chi-square =14.29 P<0.05
Class-II	14 (29.79)	47 (10.45)	
Class-III	71 (55.47)	128 (28.44)	
Class-IV	111 (57.51)	193 (42.89)	
Class-V	46 (58.97)	78 (17.33)	
Total	243 (54.00)	450 (100)	
Immunization Status			
Fully Immunized	184 (54.44)	338 (75.11)	Chi-square = 0.48 P>0.05
Partially Immunized	30 (50.00)	60 (13.33)	
Unimmunized	29 (55.77)	52 (11.56)	
Total	243 (54.00)	450 (100)	

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“Natural forces within us are the true healers of disease.”

“To do nothing is sometimes a good remedy.”

“It's far more important to know what person the disease has than what disease the person has”

Hippocrates

" The inferior doctor treats actual sickness, The mediocre doctor attends to impending sickness but The superior doctor prevents sickness."

Chinese Proverb

Original article

A study on taboos and misconceptions associated with pregnancy among rural women of Surendranagar district

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Abstract

Background:

Poor maternal nutrition, especially in rural settings, adversely affects pregnancy and birth outcomes. In many local communities, pregnant women have food taboos with consequent depletion of vital nutrients. This study is aimed at describing women who are likely to have certain taboos/misconceptions during pregnancy.

Methodology:

A cross sectional study was conducted in rural area Khodu of Surendranagar. 100 households were selected by simple random sampling. Pre - tested questionnaire was used to collect information. All the women above 18 years of age were interviewed.

Results:

Out of 198 women interviewed 32.9% were in 25-34 years age group. Majority of women (52.0%) were illiterates and 41.4% were housewives. Majority of them (39.0%) belonged to social class V. About 77.0% women had some kind of taboos/misconceptions associated with pregnancy. Most common taboos/misconceptions seen were avoidance of some food/fruit during pregnancy (48.1%). About 31.7% said consumption of saffron results in fair skin of the child and 20.2% women had multiple other misconceptions. Most common food avoided were Papaya (53.5%), Ground nut (13.6%) and citrus food (24.7%). Reasons given for not consuming these foods were many. About 52.1% said abortion as a reason, 26.0% said it causes placental disruption and 21.9% gave multiple answers like hot food, cold food, seizures, difficult labour etc.

Conclusion:

Larger proportion of women still believes in old unscientific tales. With increase in literacy status such taboos/misconceptions can be removed. There is a need for nutrition education and awareness generation among women.

Keywords:

Taboo, misconception, health, food, pregnancy.

Introduction:

Whether rural or urban, People have their own beliefs and practices. Some are based on centuries of trial and error and have positive values while others may be useless or harmful.¹

Taboos and misconceptions during pregnancy have been part of Indian cultures since centuries. The avoidance of certain food items and incorrect knowledge regarding its benefits can deprive women from adequate nutrition. A balanced and adequate diet is therefore, of utmost importance during pregnancy and lactation to meet the increased needs of the mother, and to prevent “nutritional stress”.² In various studies it was seen that pregnant women in various parts of the world are forced to abstain from nutritious foods as a part of their traditional food habits.^{3,4,5}

During pregnancy, the nutritional requirements of women increase to support optimum foetal growth and development. Poor maternal nutrition during pregnancy usually results in low birth weight and high pre-natal and infant mortality. Food taboos have been identified as one of the factors contributing to maternal under nutrition in pregnancy; especially in rural.⁶

The present study is aimed to explore some of the taboos and misconceptions associated with pregnancy among the rural women of Surendranagar.

Aims and objectives:

1. To explore some of the taboos and misconceptions associated with pregnancy.
2. To correlate the findings with the socio-demographic factors.

Materials and methods:

A cross sectional study was conducted in field Area of Primary health Care , Khodu Surendranagar. Total 100 households were selected by simple random sampling and door to door survey was conducted. A pre-designed semi-structured questionnaire was used.

Before interview, subjects were informed about the purpose of the study. The houses with door locked and those not willing to give consent were excluded from the study. All the women above 18 years of age were included in the study.Total 198 women were interviewed. Apart from socio-demographic details women were asked about the different kinds of taboos and misbelieves they followed during pregnancy.Modified Prasad’s classification was used to grade the socio-economic status. Data was analysed using SPSS windows.

Results and Discussion:

Total 198 women from rural area Khodu of Surendranagar district were interviewed. Women above 18 years of age were taken for the study. Most of the women i.e. 32.9% were between 25-34 years age group followed by 29.3% were 44 years and above. Regarding literacy status 52.0% women were illiterates (Table 1). In a similar study conducted by Rajkumar Patil et al majority of participants (24.5%) were in age group 25-34 years of age and most of them were illiterates(91.3%).⁷ Regarding occupational status about 41.4% women were house wives and 80.3% were married (Table 2). About 39% of the women were from socio-economic class V according to

modified Prasad’s classification. Out of 198 women, majority belongs to Socio economic class v (39%) followed by IV (25%), III (20%), II (8%) and I (8%).

Table1: Distribution of study population according to age and educational status.

Socio- demographic factors	Frequency (N=198)	Percentage (%)
Age (Years)		
18-24	44	22.2
25-34	65	32.9
35-44	31	15.6
44>	58	29.3
Educational status		
Illiterate	103	52.0
Primary	26	13.1
Secondary	34	17.1
Higher secondary	19	9.5
Graduate and above	16	8.0

Table 2: Distribution of Study population according to occupation and type of family

Occupation	Frequency (N=198)	Percentage (%)
Farmers	47	23.7
Labourers	31	15.6
Housewife	82	41.4
Business	38	19.3
Marital status		
Married	159	80.3
Unmarried	13	6.56
Widowed	26	13.1

Table 3: Different taboos/ misconceptions present in the study population

Taboos/Misconceptions	Frequency (N=152)	Percentage (%)
1. Shape of face, abdomen or built can predict gender of the baby.	15	9.8
2. Avoidance of some food/fruit during pregnancy.	73	48.1
3. Consumption of saffron results in fairer skin of child.	48	31.7
4. Pregnant women should take total bed rest.	6	3.9
5. Others*	10	6.5

Table 4: Association between presence of taboos and literacy status of women

Taboos /Misconceptions	Illiterate (103)		Literate (95)	
	Frequency	%	Frequency	%
Yes	93	90.3	59	62.2
No	10	9.7	36	37.8

($\chi^2=22.014$, d. f. =1, $p<0.0001$)

Literacy is an important determinant for health and disease so literacy status was compared with presence /absence of taboos and their reasons between literates and illiterates. There was significant association of literacy status with presence of taboos as shown in the table 4.

Table 5: Association between avoidance of any food during pregnancy and literacy status

Avoidance of any food	Illiterate (103)		Literate(95)	
	Frequency	%	Frequency	%
Yes	42	40.7	31	32.7
No	23	22.5	29	30.5
Don't know	38	36.8	35	36.8

($\chi^2=2.51$, d. f. =2, $p=0.3407$)

In our study 48.1% women had some taboos associated with avoidance of food but there was no significant difference regarding this misconception between literates and illiterates (Table 5). In a study conducted by Ali NS et al 12% women believed in restricting some food items during pregnancy this was different from our finding due to difference in community setting. But there was no significant difference among education levels and food avoided, similar to our study finding.⁸

Most common food avoided were papaya (53.5%), citrus food (24.7%) and groundnut (13.6%). Reasons for not consuming such food were abortion, placental disruption and multiple others (Table 6). A study done in Tamil Nadu showed that 82% women avoided papaya during pregnancy⁹. In our study 53.5%

believe in not consuming papaya during pregnancy. In a study done by Puri S and Kapoor S it was reported that 16.5 % women believed that papaya can cause abortion similar to our study finding. Papaya, mango , brinjal are considered to be 'hot food' . People believe that 'hot' food items are avoided during pregnancy as it is thought that it will cause abortion. Similarly 'cold' foods are avoided during lactation as it might affect the quality and quantity of milk production.¹⁰

Table 6: Food avoided during pregnancy and the reasons for not consuming such food

Food avoided	Frequency (N=73)	Percentage (%)
Papaya	39	53.5
Groundnut	10	13.6
Citrus food*	18	24.7
Others**	6	8.2
Reasons for not consuming food		
Abortion	38	52.1
Placental disruption	19	26.0
Multiple answers***	16	21.9

(Citrus food*: Orange, lemon, buttermilk, curd .others**: brinjal, tea, milk; multiple answers***:hot food, cold food, seizures, difficult labour, overweight)

Table 7: Misconception about saffron consumption during pregnancy and literacy status

Misconception	Illiterate (103)		Literate (95)	
	Frequency	%	Frequency	%
Yes	35	33.9	13	13.7
No	24	23.4	48	50.5
Don't know	44	42.7	34	35.8

($\chi^2=19.07$, d. f. =2, $p<0.0001$)

Misconception regarding consumption of saffron results in fairer skin of child was seen in 33.9% illiterate women as compared to literates in whom only 13.7% had such misconception. There was a significant difference regarding this

misconception between literates and illiterates (Table 7).

Conclusion and Recommendations

In our study it was found that many women still believes in old unscientific taboos during pregnancy. With increase in literacy status such taboos/misconceptions can be reduced. Maternal nutrition in pregnancy is pivotal to pregnancy outcomes. There is a need for nutrition education and awareness generation among women.

Acknowledgement

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“A healthy attitude is contagious but don't wait to catch it from others. Be a carrier.”

Tom Stoppard

“Time and health are two precious assets that we don't recognize and appreciate until they have been depleted.”

Denis Waitley

“Good health and good sense are two of life's greatest blessings.”

Publilius Syrus

Original article

A study to assess awareness regarding Diabetes Mellitus and factors affecting it, in a tertiary care hospital in Kancheepuram District.

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Abstract

Background: World will have 300 million diabetics by 2025. The disease leads to high levels of morbidity and mortality and has huge financial impact on individuals and national budgets. Knowledge of the disease will play a great cost effective role in prevention and control of the disease.

Objectives: This study was undertaken with the aim to assess awareness regarding diabetes mellitus and factors affecting the awareness levels.

Methods: Patients of a tertiary care hospital, with diabetes mellitus were included in the study. Awareness regarding diabetes was judged for knowledge, self care practices and complications by using a self administered questionnaire. The scores are analysed against the variables to determine the factors affecting the scores.

Results: The average scores on all three aspects were observed to be above 60 %. Awareness regarding fasting and post prandial blood sugar, high fibre diet, foot care and ophthalmic complications was observed to be high. Moderate awareness was observed regarding diabetes mellitus being a lifestyle disorder, self monitoring of sugar and renal, cardiac and cerebral complications. Poor knowledge was observed regarding Hb A1c. Females and unemployed individuals had significantly lower scores. Self employed, higher education, family history of diabetes mellitus and long duration of sickness had positive effect on the scores. Age, marital status and BMI had no effect on the scores.

Conclusions: Awareness regarding all the aspects of diabetes mellitus needs to be

increased for better control of the disease and its complications. Females and unemployed individuals need to be given special emphasis.

Key Words:

Diabetes Mellitus, Knowledge, Complications, Self Care

Introduction:

Diabetes is a chronic disease caused by inherited and /or acquired deficiency in production of insulin by the pancreas or in its effects. The worldwide prevalence of diabetes is 4% (1995) which will be 5.4% in 2025. ^[1] In India, thirty-five million people have diabetes—a number expected to more than double by 2025, disproportionately affecting working-age people. The economic impact of this increase could be devastating to India's emerging economy. ^[2] Studies in India estimate that, for a low-income Indian family with an adult with diabetes, as much as 25% of family income may be devoted to diabetes care. Intangible costs (pain, anxiety, inconvenience and generally lower quality of life etc.) also have great impact on the lives of patients and their families and are the most difficult to quantify. ^[3] It is believed that patient's knowledge of self care is the key to achieving therapeutic goals in ambulatory care. ^[4] Being aware of various aspects of the disease is the first step for primary and secondary prevention. If the health care providers are aware of the level of awareness in community they can plan their preventive measures accordingly.

With this background, the current study was planned with the objective of

assessing level of awareness regarding various aspects (Knowledge, Self care practices and Complications) of diabetes mellitus and to assess the factors affecting this level of awareness.

Materials and Methods:

This Cross sectional study was conducted at a tertiary health care hospital attached to a Medical College in Kancheepuram District, Tamil Nadu. The study was carried out among patients diagnosed with Type II Diabetes Mellitus (DM). Patients with DM coming to OPD for routine follow up, who agreed to be a part of the study were included in the study group. A 23 item questionnaire was prepared according to steps given in US National Diabetes Education Programme.⁵ The questionnaire included demographic variables like age, sex, marital status, education, occupation and years with diabetes, family history of DM etc. Questions on awareness regarding DM were divided under three headings, namely knowledge of DM, self care practices and knowledge regarding complications of DM. The questionnaire was translated in Tamil and was pilot tested.

The study was carried out over a period of seven months (April 2012 to November 2012). Informed consent of 123 patients was taken. The questionnaire was self administered to them. All the respondents were assured of confidentiality and anonymity. The time taken by each patient to complete the questionnaire ranged from 15 – 20 minutes. The responses were in the format of Yes, No and Don't know. These were analysed as correct, don't know, wrong and were scored as 2, 1, 0 points respectively. Scores were calculated separately for knowledge, self care practices and complications and were also compared with demographic variables. SPSS 16 version was used. Independent t test and one way ANOVA were applied at 5 % level of significance.

Results:

Majority of the individuals (50.4%) are in the age group of 46 – 60 years. Mean age is 51.88 years, Standard Deviation is 10.63 years and range is 21 – 74 years. 60.2 % of respondents are females, 85.4 % are married. 43.9% are unemployed and 20.3% are illiterate.

Figure 1 shows Awareness scores based on correct responses on various aspects of DM. Out of 123, 80(65%) had good knowledge of DM, 109(88.6%) were well aware of self care practices and 79(64.2%) knew about the complications. Table 1 shows the details of the scoring system and distribution of the respondents according to it.

In Table 2 selected questions from the questionnaire have been discussed. It is observed that 69 (56.1%) did not answer correctly that DM is a life style disorder. 69.1% were aware of the importance of getting fasting as well as post prandial sugar checked, however only 14.6% were aware about Hb A1 C. Only 39.8% were aware of self monitoring of blood glucose. However majority (86.2 & 82.1 respectively) appreciated the importance of high fibre diet and foot care. More than half of the respondents were aware of complications like blindness, renal problems, Ischemic Heart Disease and Stroke.

Table 3 shows comparison of average awareness score with demographic variables. Maximum numbers of patients are between 30 – 60 years of age 92 (74.8%). It is observed that average score of awareness is equally distributed among different age groups, indicating that age has no effect on awareness score ($F = 1.139$, $p = 0.3$). Though number of females 60.2% is more than the males in the study group, the score is observed to be more in males than in females. This difference is statistically significant. ($t = 3.59$, $p = 0.00$). 85.4% of the sample is married though it is observed that marital status does not affect the distribution of the score ($F = 2.5$, $p = 0.08$). However it should be

noted that sample size of unmarried is relatively small (0.8%). 43.9 % of the study sample is not actively earning a livelihood (39 % housewives and 4.9% unemployed). The mean awareness score was highest in self employed. Significant difference is observed in the average score of respondents of different occupational status, unemployed being the lowest ($F=4.09$, $p=0.001$). 20.3% of population was illiterate. Significant association is observed between average score of knowledge and increasing educational status. ($F=13.76$, $p=0.00$). Score is observed to be less in post graduate category because the sample size is small. 43.1 % of the respondents had a family history of DM. The average score is significantly higher in respondents having family history of DM. ($t = 2.39$, $p=0.018$). BMI of 95 (77.3%) respondents was above the normal range. However BMI showed no effect on the average score ($F = 1.95$, $p = 0.12$). Half 50.4% of the respondents were suffering from diabetes for a duration of 1-5 years. Increase in duration since diagnosis is shown to have significant effect on the awareness score. ($F = 2.97$, $p = 0.03$)

Discussion:

Majority of the individuals (50.4%) in the present study are in the age group of 46 – 60 years. This is on the higher side as compared to a study conducted in rural Tamaka in Kolar District, where 54.8 % of diabetic patients were observed to be in the age group of 30 - 45 years and another conducted in Dharward, an urban area in India, where 65 % of study population was in the age group of 30-49 years.^[6, 7] The sample consisted of 60.2 % females, with a majority of married individuals and literates. Similar demographic findings have been observed in multiple studies conducted in different parts of the country.^{7, 8, 9}

Awareness was more than 60 % in all three aspects that have been measured. Similarly, Mehta RS et al observed that

majority of the subjects (82.1%) had knowledge about the disease.⁹

In the current study, awareness regarding fasting and post prandial blood sugar, high fibre diet, foot care and ophthalmic complications was observed to be high. Chandalia HB et al conducted a case control study, where it was observed that, diabetics had more awareness about footwear, foot care and knowledge of symptoms relating to diabetic foot than the non-diabetic controls though even in the diabetics the total average score was 57% indicating that there was scope for improving knowledge about prevention of diabetic foot disease.¹⁰

Moderate awareness was observed regarding DM being a lifestyle disorder, self monitoring of sugar and renal, cardiac and cerebral complications in this study. In the study conducted by Mehta RS et al 42.9% were familiar with complications of diabetes.⁹ In a study conducted by Mohan D et al. regarding awareness and knowledge of Diabetes in Chennai, only 19.0% of whole population knew that diabetes could cause complications. Among those aware, foot problems (23.0%) and kidney disease (17.4%) were the most commonly reported complications.¹¹ However Munninarayan et al. observed that 74.2% were aware that diabetes could produce some complications.⁶ 85.4 % of respondents were not aware of Hb A1c. Similarly, in a study conducted by Gulabani et al 94.1% patients did not know about glycosylated hemoglobin (HbA1c).¹²

Females and unemployed individuals have significantly lower scores in the current study. Similarly, Gulabani et al. observed that the mean score in men was 2.84 points higher than that in women and the difference was found to be statistically significant.¹² However, in study conducted in Nigeria it is observed that female patients are more knowledgeable.⁴

Self employed status, higher education, family history of DM and long

duration of sickness had positive effect on the scores. Similarly Adibe MO observed that patients who were attending or stopped at secondary school and patients who had lived many years with diabetes (>10 years) were more likely to be knowledgeable.⁴ Similar association with education and duration of disease was also observed in other studies.^{12, 13}

Age, marital status and BMI had no effect on the scores. However Adibe MO observed that younger patients were more knowledgeable.⁴

Conclusion:

Diabetes is another popular example where prevention is bound to be better than cure. Understandably the first objective of National Diabetes Control Programme is prevention of diabetes through identification of high risk subjects and early intervention in the form of health education.¹ Knowledge is the greatest weapon in fight against diabetes. Information can help people assess their risk of diabetes, motivate them to seek proper treatment and care, and inspire them to take charge of their disease.⁷

The current study shows that awareness is not even in all the aspects of the disease. We need to develop a comprehensive health education

programme where all aspects of DM namely, knowledge about the disease and complications, self care, HbA1c, self monitoring etc. are covered. We specially need to target women and illiterate population. We need to reach out to individuals who are not diagnosed from the community. Further research needs to be done regarding the felt needs of the patients. Although diabetes action has been initiated, efforts are weak and fragmented. Progress is impeded by a health system that places a higher priority on communicable diseases and maternal and child health services and by a private health system driven by curative medicine. However, prevention is cost-effective and should be a focus.²

Table 1: Distribution of respondents according to the Awareness score

	Category	No. (%) n =123
Knowledge of diabetes among study group	Good (Score 14–20)	80 (65%)
	Fair (Score 7–13)	43 (35%)
	Poor (Score 0–6)	-
Knowledge of self care practice for diabetes among study group	Good (Score 12–18)	109(88.6%)
	Fair (Score 6–11)	14 (11.4%)
	Poor (Score 0–5)	-
Knowledge of Complications	Good (Score 6–8)	79 (64.2%)
	Fair (Score 3–5)	43 (35%)
	Poor (Score 0–2)	1 (0.8%)

Table 2: Response to selected questions on awareness regarding Diabetes Mellitus

Sr. No.	Question	Yes No. (%)	No No. (%)	Do not Know No. (%)
Knowledge of Diabetes				
1	Is the diabetes Mellitus life style related disease?	54 (43.9)	3 (2.4)	66 (53.7)
2	Is it important to do both fasting as well as Post Prandial blood sugar level for diagnosis & monitoring?	85 (69.1)	2 (1.6)	36 (29.3)
3	Apart from blood sugar level are you aware about HbA1c?	18 (14.6)	2 (1.6)	103 (83.7)
Self care practices				
4	Are you aware of self monitoring of blood glucose in Diabetes?	49 (39.8)	3 (2.4)	71 (57.7)
5	Is it necessary to consume high fibre diet in DM care?	106 (86.2)	1(0.8)	16 (13)
6	Is foot care necessary in DM ?	101 (82.1)	2 (1.6)	20 (16.3)
Knowledge regarding complications of DM				
7	Unmanaged DM can cause eye problems or even blindness	85 (69.1)	1(0.8)	37 (30.1)
8	Uncontrolled DM can affect your kidneys	73 (59.3)	1(0.8)	49 (39.8)
9	Uncontrolled DM can cause Ischemic Heart disease	62 (50.4)	1(0.8)	60 (48.8)
10	Uncontrolled DM can cause stroke	67 (54.5)	1(0.8)	55 (44.7)

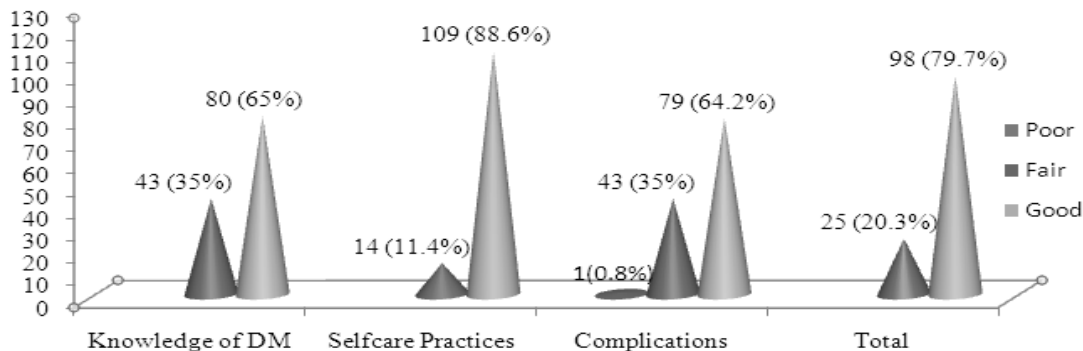
n = 123

Table 3: Comparison of Awareness score with demographic variables.

Sr. No.	Characteristics	Category	Frequency (%)	Mean Score \pm SD
1	Age (Years)	< 30 yrs	5 (4.1%)	37.0 \pm 4.3
		30 – 45 yrs	30 (24.4%)	38.73 \pm 6.58
		46 – 60 yrs	62 (50.4%)	36.53 \pm 5.49
		> 60 yrs	26 (21.1%)	35.58 \pm 7.89
		F = 1.139, p = 0.3 (One way ANOVA)*		
2	Sex	Male	49 (39.8%)	39.39 \pm 5.53
		Female	74 (60.2%)	35.36 \pm 6.33
		t = 3.59, p = 0.00 (Independent t test) †		
3	Marital Status	Single	1 (0.8%)	25
		Married	105 (85.4%)	37.31 \pm 5.98
		Widow	17 (13.8%)	35.41 \pm 7.68
		F = 2.5, p = 0.08 (One way ANOVA)*		
4	Occupation	Unemployed	6 (4.9%)	30.5 \pm 5.79
		House wife	48 (39%)	36.19 \pm 5.59
		Employed	19 (15.4%)	39.37 \pm 5.36
		Self Employed	13 (10.6%)	41.08 \pm 5.72
		Retired	8 (6.5%)	40.12 \pm 6.36
		Farmer	4 (3.3%)	39.25 \pm 2.75
		Others	25 (20.3%)	34.6 \pm 6.95
		F = 4.09, p = 0.001 (One way ANOVA) †		
5	Education	Illiterate	25 (20.3%)	32.48 \pm 5.84
		Primary	47 (38.2%)	35.02 \pm 5.25
		Secondary	40 (32.5%)	40.75 \pm 4.83
		Under graduate	8 (6.5%)	43.0 \pm 3.29
		Post graduate	3 (2.4%)	37.67 \pm 10.97
		F = 13.76, p = 0.00 (One way ANOVA) †		
6	Family History of DM	Yes	53 (43.1%)	38.49 \pm 6.52
		NO	70 (56.9%)	35.79 \pm 5.94
		t = 2.39, p = 0.018 (Independent t test) †		
7	Body Mass Index (BMI)	Underweight (< 18.5)	6 (4.9%)	37.17 \pm 4.31
		Normal (18.5 – 23)	22 (17.9%)	34.09 \pm 6.69
		Pre obese (23 – 27.5)	51 (41.5%)	37.86 \pm 6.18
		Obese (> 27.5)	44 (35.8%)	37.3 \pm 6.27
		F = 1.95, p = 0.12 (One way ANOVA)*		
8	Duration since diagnosis	Up to 1 yr	28 (22.8%)	34.43 \pm 6.29
		1 yr to 5yr	62 (50.4%)	37.15 \pm 5.79
		5yr to 10yr	22 (17.9%)	37.82 \pm 7.17
		More than 10 yr	11 (8.9%)	40.55 \pm 5.79
		F = 2.97, p = 0.03 (One way ANOVA) †		

n = 123, * = Non-significant, † = Significant

Figure 1: Awareness regarding various aspects of DM



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Original article

The Treatment Effect Comparison through Level of Microalbuminuria in Type 2 Diabetes Patients: A Bayesian Approach

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Abstract

The microalbuminuria is defined as small quantities of albumin in the urine. It is highly prevalent in type 2 diabetic population and useful to measure the severity of kidney damage. A Poisson and Negative-binomial model have been applied for studying the presence of microalbuminuria in urine among the type 2 diabetes patients. The effect of drug treatment viz. (i) Metformin with Pioglitazone and (ii) Pioglitazone with Gliclazide, have been compared in a clinical trial of type 2 diabetes patients in the present study. It has been found that Metformin with Pioglitazone is more effective to reduce the microalbuminuria as compared to Pioglitazone with Gliclazide.

Introduction:

With the explosive growth of incident the type 2 diabetes has become a major international public health challenge. Moreover, an increasing number of individuals have exposure of the pre-diabetic state, which is dangerous for future risk of developing high diabetes incidence. Earlier findings suggests that type 2 diabetes can be delayed or prevented in individuals by modification of lifestyle and medication (Gerstein et al.(2001); Forman et al. (2006)).The awareness about the prevention is a fundamental public health challenge and there is a great requirement of effective strategies to identify high-risk individuals. Unfortunately, the best available risk stratification method is an Oral Glucose Tolerance Test (OGTT), although it is costly and difficult to perform in a clinical setting. The Microalbuminuria is defined as small quantities of albumin in the urine

ranging from 30 to 300 mg/dl. It is highly prevalent in type 2 diabetic population and essential to measure the severity of kidney damage. According to the worldwide survey (Parving et al. (2006)), 40% of the patients with diabetes is in kidney disease. The similar results have been found in a large population of Australian population (Tapp et al.(2004)). Atkin (2005) and Hillege et al. (2001) have showed that the incidence of an individual's moving from a normalalbuminuric to a microalbuminuria classification by a rate of approximately 8% in 4 years, which is surprisingly high. Dejong et al. (2006) have reviewed the public health perspectives and challenges of screening and monitoring of albumin in urine in relation to disease prevention. However, the classical view of the effect of microalbuminuria is the consequence of renal damage.

Recently, different methods have been employed to analyze the drug effect comparison through Bayesian Inference (Lee et al. (2002)). The Bayesian approach gives consistent results in comparison to frequency approach (Wong et al. (1985)). In case of Bayesian approach the inference of the random effects can be obtained through the Markov Chain Monte Carlo (MCMC), which is not possible in frequency approach. In this work the Poisson and Negative-binomial models have been applied through Bayesian approach. The urinary albumin excretion is increasingly being accepted as an important clinical outcome predictor. Because of the great public health need for a simple and inexpensive test to identify individuals at high risk for developing type 2diabetes, it has been suggested that the albumin might serve this purpose.

Objective:

The objective of this work is to apply different models and approach on the sampled microalbuminuria value in the type 2 diabetes drug effect comparison. This work is contributed to compare the drug viz. (i) Metformin and Pioglitazone and (ii)Pioglitazone with Gliclazide to reduce the albumin level among the type 2 diabetes patients. The biochemical parameter of interest microalbuminuria has been observed in this work in three follow up visits of each patients. The second and third observations of each patient have been considered in third and twelve months in sequence of baseline visit.

Application:

In this work, the secondary data set has been obtained from the clinical trial, conducted in 2008. This trial has been performed in Menakshi Mission Hospital, Madurai. It has been carried out to observe the drug treatment effect on type 2 diabetes patients in south Indian population. The patients are taken from the randomized double blind and parallel group study. The part of the data set has been considered with microalbuminuria sample of 100 patients: 50 of these are grouped as treatment 1 (Metformin with Pioglitazone) and rests of them are as treatment 2 (Pioglitazone with Gliclazide). The patients are followed up for the three occasions during a 12-month period. The microalbuminuria have been measured on each of these three visits.

Model Specification

The level of microalbuminuria of the i^{th} patient's j^{th} visit has been denoted by Y_{ij} . Kocherlakota et al (1992) have explained a broad discussion on Poisson distribution. Berkhout et al (2004) have explained the condition where Y_{i1} and Y_{i2}/Y_{i1} are distributed with Poisson mean. A Negative Binomial model can be derived in close to the Poisson distribution (Winkelmann (2000)).

Model1:- (Negative Binomial distribution)

A discrete random variable ($Y \sim NB(\pi, r)$) becomes Negative Binomial

distribution with the probability density function

$$f_{NB}(y; \pi, r) = \frac{\Gamma(y+r)}{y!\Gamma(r)} \pi^r (1 - \pi)^y$$

for $y = 0, 1, 2, \dots, r$ and $r > 0$. (3)

The mean and variance can be denoted by

$$E(Y) = r(1 - \pi)/\pi \quad \text{and} \quad \text{Var}(Y) = r(1 - \pi)/\pi^2.$$

(4)

If we assume that,
 $Y|u \sim \text{Poisson}(\lambda u)$ and $u \sim \text{Gamma}(r, r)$. (5)

The resulting distribution of y becomes to

$$f(y) = \int_0^\infty f(y/u)f(u) = \frac{\Gamma(y+r)}{y!\Gamma(r)} \left(\frac{r}{r+\lambda}\right)^r \left(\frac{\lambda}{r+\lambda}\right)^y,$$

(6)

In case of count data modeling, we can use the model coefficient $\beta_j, j = 0, 1, 2, \dots, p$ and the dispersion parameter r in gamma prior distribution. In this work, the free available software WingBugs has been used to add different structures for the dispersion parameter r . It is flexible to add different data structure assumption in the model.

Model2:- (Poisson gamma model)

The Poisson model can be formulated in two ways viz. (I) Poisson-Gamma Model and (II) Poisson-log normal model based on the prior assumption of the mean parameter.

The Poisson-gamma model is useful to model count data with over dispersion by

$$Y_i \sim \text{Poisson}(\lambda_i u_i)$$

(7)

$$u_i \sim \text{Gamma}(r_i, r_i) \text{ for } i = 1, 2, \dots, n.$$

(8)

The covariates of interest can be called by both λ_i and u_i . In this work, the covariate of interest is the drug treatment effects. The parameter λ_i has been replaced by λ_{iD_i} , where D_i is applied as the drug index values 1 or 2. The i^{th} individual has been treated as drug treatment effect "Metformin with Pioglitazone" or "Pioglitazone with Gliclazide". The results of Negative-Binomial distribution have

been obtained and compared with the Poisson-gamma and Poisson-log-normal model.

Model 3:- (Poisson-log normal)

The model can be written in the following term with the assumption of the normal distribution to the error term by, $Y_i \sim \text{Poisson}(\mu_i)$

$$\log(\mu_i) = \beta_1 + \beta_2 X_{i1} + \dots + \beta_p X_{ip} + \epsilon_i \tag{9}$$

where, β_1, β_2, \dots and β_p are the coefficient of interest and the error term ϵ_i is assumed to be follows $\epsilon_i \sim N(0, \sigma_\epsilon^2)$

The model can be formulated to $Y_i \sim \text{Poisson}(\lambda_i u_i)$

$$u_i \sim \text{Exp}(\epsilon_i) \tag{12}$$

$$\log(\lambda_i) = \beta_1 + \beta_2 X_{i1} + \dots + \beta_p X_{ip} \tag{13}$$

The model is extended to Poisson-log normal instead of Poisson-gamma. However, the calculation through Poisson-log normal is computationally difficult and complicated as compared to negative binomial. The mean and variance can be calculated by

$$E(y/\lambda, \sigma_\epsilon^2) = \lambda e^{\sigma_\epsilon^2/2} \tag{14}$$

and

$$V(y/\lambda, \sigma_\epsilon^2) = \lambda e^{\sigma_\epsilon^2/2} + \lambda^2 e^{2\sigma_\epsilon^2} - \lambda^2 e^{\sigma_\epsilon^2} \tag{15}$$

Model Diagnostics:

Table 2 gives the different estimated parameters from negative-binomial distribution through MCMC with 20,000 iterations. These two estimates for both the procedures are essentially identical.

Table 3 provides output from the Poisson-gamma model of the posterior distribution. In the Poisson normal distribution model, the parameter estimates and standard errors consistently do not exceed the corresponding estimates in the negative-binomial distribution.

The corresponding DIC (Decision Information Criterion) value of each models are given in table 5. In the three models, the minimum DIC value is in Model 1 followed by Model 2 and Model 3. It can be concluded that Model 1 is appropriate as compared to the Model 2. The standard deviations of coefficient values confirm that Model 1 is suitable as compared to Model 2. However, it is very difficult to make out which model is the best, but keeping in view the problems, Model 1 can be considered the best and appropriate.

Results:

The DIC value for this model is calculated to be equal to 2324.31, which is much higher than the corresponding DIC value for the negative-binomial model (2123.23), indicating a better fit for the latter. However, the computed DIC values are based on the conditional likelihood, as described in the computational note at the end of this section. The insufficient fit of the Poisson-log-normal model is useful to examine the posterior distributions of $E(Y)$ and $V(Y)$ for each drug group. The $E(Y)$ and $V(Y)$ are the expected mean and standard deviation of the biochemical parameter microalbuminuria. The DI_{ij} has been used to obtain the dispersion index for the i^{th} models j^{th} treatment effect. In case of Negative-Binomial distribution; the DI_{11} and DI_{12} are 184.2 and 101.1 respectively for the drug treatment “Metformin with Pioglitazoen” and “Pioglitazone with Gliclazide” respectively. Where as, in Poisson-Gamma models the posterior mean for DI_1 and DI_2 are 725.7 and 270.4. The Negative-Binomial reveals the λ_1 and λ_2 with 177.00 and 83.61 but the Poisson distribution with the posterior mean 94.61 and 42.58. In presence of Poisson gamma model the posterior mean for λ_i in drug combination Metformin with Pioglitazone comes to 94.61 and 42.58 for drug combination “Gliclazide with Pioglitazone”. In case of Negative-Binomial distribution model the computed posterior mean of λ_1 for

“Metformin with Pioglitazone” and “Gliclazide with Pioglitazone” are found to be 177.0 and 83.01. The Poisson-log-normal gives the posterior mean for λ_1 and λ_2 by (92.63) and (41.36) respectively.

Discussion:

This clinical trial could be completed with the conventional statistical approach and p-value. The Bayesian analysis attaches the efforts of how the trial could change our opinion about the treatment effect. It is useful to account more variation in the model. The features of the model are important to consider before applying the small data set in the clinical trial.

Jorge et al (2010) have showed that longer duration of diabetes is positively associated with higher level of albuminuria. They have also been found that the high level of HBA1C (glycosylated hemoglobin) is significantly correlated with the severity of albuminuria. As the early marker of nephropathy the level of microalbuminuria can be used in type 2 diabetes patients for detecting renal damage. Microalbuminuria, an early marker of nephropathy, can also be considered at the time of diagnosis to the patients with type 2 diabetes. Viberta et al. (2002) have confirmed that enhancing microalbuminuria excretion reduced by valsarun in type 2 diabetes patients with micro-albuminuria. It has been found that the microalbuminuria in the type 2 diabetes patients is presents as the independent risk factor for renal disease. Brantma et al (2006) have shown that individuals with microalbuminuria had an approximately four times chance to develop new-onset diabetes than those with low normal microalbuminuria levels. However Tonolo et al. (1997), Nakamura et al. (2000) and Gambaro et al. (2002) have proved that statins and glucose aminoglycans lowers the albuminuria. The intervention strategies could be very helpful not only in secondary but also in primary prevention. Thus albumin excretion levels represent the primary marker for success of success

of such therapies. This study is attributed to compare the drug treatment effect to reduce the microalbuminuria.

In this paper, the novel models with Bayesian approach have been presented to obtain microalbuminuria level in type 2 diabetes patients and, therefore, the drug effect comparison. The results confirm that Negative-Binomial and Poisson gamma models are useful tools for longitudinal data analysis and, consequently, for the actual application to the drug effect comparison in clinical trial. The Markov Chain Monte Carlo iteration have been employed to estimate the microalbuminuria values for different visits in type 2 diabetes patients. We believe that more research is needed in this area.

The present study confers the presence of microalbuminuria in type 2 diabetes patients. This study extends our knowledge of the efficacy of treatment in patients with type 2 diabetes. The drug treatment group “Metformin with Pioglitazone” has performed better to reduce microalbuminuria in comparison to “Gliclazide with Pioglitazone”. There is no significant difference between the (Metformin with Pioglitazone) group and the (Gliclazide with Pioglitazone) group to reduce the microalbuminuria level in the study patients. The kidney failure status in case of both drug treatments is same. The statistical models with prior information need to be considered regarding information about the level of complication. It might be projected that the findings would go a long way towards achieving the goal and may also have an important model fitting with Bayesian approach.

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Table 1:- Microalbuminuria profiles of type 2 diabetes patients included in the study

Type of drug	Number of Patients	Microalbuminuria concentration (mean ±sd)
Metformin with Pioglitazone	50	(83.29±112.29)
Pioglitazone with Gliclazide	50	(167.44±155.29)

Table 2:- Estimated mean of the parameters in the model from negative-binomial model

Parameters	Mean	SD	Highest Posterior Density		Parameters	Mean	SD	Highest Posterior Density	
			2.5%	97.5%				2.5%	97.5%
λ_1	177.0	25.47	132.5	229.7	p_1	0.0057	0.0012	0.0034	0.0085
λ_2	83.61	14.06	60.95	114.7	p_2	0.0104	0.0025	0.0061	0.0158
r_1	0.9978	0.1762	0.6826	1.369	DI_{11}	184.2	43.81	117.5	287.8
r_2	0.8634	0.1548	0.5882	1.197	DI_{12}	101.1	26.01	62.93	163.8

Table 3:- Estimated mean of the parameters in the model from Poisson –gamma model

Parameters	Mean	SD	Highest Posterior Density					Highest Posterior Density	
			2.5%	97.5%				2.5%	97.5%
β_1	4.51	0.11	4.31	4.72	λ_1	94.61	12.97	71.79	121.1
β_2	3.72	0.12	3.49	3.99	λ_2	42.58	6.84	30.32	57.12
τ_1	0.72	0.14	0.46	1.04	DI ₂₁	725.7	626.2	232.5	2092.0
τ_2	0.78	0.16	0.49	1.14	DI ₂₂	270.4	223.0	90.85	784.1

Table 4:- Estimated mean of the parameters in the model from Poisson –log-normal model

Parameters	Mean	SD	Highest Posterior Density	
			2.5%	97.5%
β_1	4.5	0.13	4.32	4.59
β_2	3.8	0.25	3.59	4.05
τ_1	0.77	0.39	0.49	1.20
τ_2	0.941	0.73	0.35	1.57
λ_1	92.63	10.89	83.56	101.67
λ_2	41.36	8.98	35.36	49.73
DI ₃₁	721.65	608.56	106.67	1354.67
DI ₃₂	275.16	116.36	155.69	395.74

Table 5:- The computed DIC value for Model-1, Model-2 and Model-3.

Model	DIC
Model-1(Negative Binomial)	2123.23
Model-2(Poisson-gamma model)	2105.12
Model-3(Poisson lognormal Model)	2324.31

“Good health is not something we can buy. However, it can be an extremely valuable savings account.”

Anne Wilson Schaeff

“The truth is that stress doesn't come from your boss, your kids, your spouse, traffic jams, health challenges, or other circumstances. It comes from your thoughts about these circumstances.”

Andrew Bernstein

“Age does not depend upon years, but upon temperament and health. Some men are born old, and some never grow so.”

Tryon Edwards

Original article

Health Related Quality of life among undergraduate medical students of Kolkata

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Abstract

Introduction: The health is an estimation of well-being and this can be assessed by measuring the improvement in the quality of life related to health care. It can be measured.

Objectives: This study was conducted to assess the quality of life of medical students identifying the factors related to it.

Materials and methods: The study was observational, *cross-sectional* among undergraduate medical students of Kolkata. Psychological general well-being (PGWB) scale was study tool to collect data. The global score ranges from 0 (poor quality of life) to 110 (good quality of life). Sample size was 493. Outcome variable and explanatory variables were taken into the study. Analysis was performed with SPSS 10.0 Software.

Results: Response rate was 89.64 percent. Maximum students (65.5%) were of the age group 20-23 years. More than two-third were male. Maximum students (71.2%) came from Class I and II. A sizable amount of students (33.8%) were with depression. Up to the age of 23 yrs, majority of the students (63.6% to 68.1%) had a high score. Students of hostels and homes of different economy had no score difference. The difference between high scores in presence or absence of hobby was statistically significant. Those who suffered from any disease/disability had moderate depressive disorders.

Conclusions: Among students of age > 23

years, students without hobby, students with disease or disability mild to moderate depression was found. Other variables did not cause any discernible impact on mental status.

Key words: Kolkata, Quality of life, Undergraduate medical students

Introduction:

The Constitution of the World Health Organization (WHO) defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." It follows that the measurement of health and the effects of healthcare must include not only an indication of changes in the frequency and severity of diseases, but also an estimation of well-being and this can be assessed by measuring the improvement in the quality of life related to health care. Although there are generally satisfactory ways of measuring the frequency and severity of diseases, this is not the case as far as the measurement of well-being and quality of life are concerned.¹ WHO defines quality of life as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment."¹

Ferrell, who has carried out a large research program on pain and quality of life, defined quality of life as well-being covering four areas. Quality of life is physical, mental, social and spiritual well-being.² Therefore, subjective evaluation of one individual is one of the very important issues in relation to quality of life.

Many international studies were conducted about Health Related Quality of Life (HRQL) among medical students. In one of such studies among medical students, major impairments in HRQL were observed among third year students, students with depressive symptoms and girl students. Medical schools should institute efforts to ensure that students' HRQL and emotional support are maintained, particularly during pre-examination and post-examination phases of medical training when they are highly stressed.³

Issues linked with the notions of quality of life (QOL) and with motivation to learn by medical students have not been well documented. This is true in both the international and the Indian contexts. Our article addresses this lack of research by focusing on the QOL of medical students.

Although there is evidence to suggest that medical students do well academically, but it was suggested by some studies that the current educational process may have inadvertent negative effect on students' mental health with a high frequency of depression, anxiety and stress which is much higher than the normal population leading even to suicidal tendencies. Henning MA et al study also suggested that the psychological distress among students may adversely influence their academic performance, contribute to their academic dishonesty and play a role in alcohol and substance abuse. So it was felt that an investigation into their QOL would be instructive as QOL will likely have an impact on cognition, behavior, general well-being and motivation.⁴

Various scales have been utilized to assess the general wellbeing (feeling of happiness or unhappiness) of an individual. In the present study, the Psychological General Well-Being (PGWB) Index scale (A measure of self-representations of intrapersonal affective or emotional states reflecting a sense of subjective well-being or distress) was used.^{5, 6} The PGWB questionnaire is a validated Health Related Quality of Life (HRQoL) measure, widely used in clinical trials and epidemiological research to provide a general evaluation of self-perceived psychological health and well-being. This has been utilized as an instrument to assess the quality of life attributes.

With this background, this study was conducted to assess the quality of life of medical students with emphasis on finding out socio-demographic status of the participants, identifying the factors related to quality of life of them and assessing the well-being status of the subjects.

Materials and methods:

Type of study was observational, descriptive, institution based. Study design was Cross-sectional. Place of study was one of the medical colleges of Kolkata. Study population was all undergraduate students of a medical college of Kolkata. Study tool was a pre-designed and pre-tested questionnaire. Psychological general well-being (PGWB) scale^{5, 6} was used to collect data for the purpose of assessment of quality of life of the students.

PGWB scale was utilized to assess the individual feels about his/her 'inner personal state' rather than about external condition. The PGWB is comprised of 22 items in the following 6 dimensions: anxiety (5 items); depressed mood (3 items); positive well-being (4 items); self-control (3 items); general health (3 items); and vitality (4 items). Responses are rated on a six-point Likert scale ranging from 0 (reflecting the most distress) to 5 (reflecting the highest level of well-being). Global score is often ranging from 0 to 100 (when items range from 0 to 5) or 22

to 132 (when items range from 1 to 6). For the current study, this instrument was scored following the approach proposed by Chassany et al in the recently published user's manual. The six PGWB raw subscale scores were computed by summing the item responses, and the raw global score is the sum of the six subscale scores. Then, these raw scores were transformed to a 0–100 scale by dividing each raw score by the maximum possible score, multiplying by 100. Higher scores reflect better well-being. A global score is also (TGWB) computed as the sum of scores on the 6 dimensions. The global score is calculated by the sum of the 6 dimension scores. It ranges from 0 (poor quality of life) to 110 (good quality of life), thus based on the 0-5 item scaling range.

This self-administered questionnaire included both positive and negative questions with a time limit (5-10 minutes). Its approach may be seen as more "positive" than other quality-of-life scales because it measures well-being rather than disability. The PGWB scale gives us 3 categories of people based on the global score acquired by the students. Score ≤ 23 was classified as severely depressed. Score 24-63 was categorized as mild to moderate depression. Students who got score 64-110 were considered normal.

The test-retest reliability coefficient of the scale after three months was between 0.68 to 0.85 with an internal consistency of 0.95. The correlational validity was between 0.65 to 0.90. Internal consistency reliability is the extent to which individual items within a scale are related to one another. Internal consistency was examined for the PGWB subscales and global score using Cronbach's formula for coefficient alpha. Cronbach's alpha with greater than 0.70 is generally considered acceptable.⁸ The overall score was fairly stable over time but was sensitive to change in patient status.

Socio-economic class (Category) of the students was assessed and the scale used was the Modified B. G. Prasad scale.⁷

Depending upon the per capita monthly income, BG Prasad developed the scale to assess the socioeconomic status and it was modified time to time. According to this scale there are five classes, class I-V (class I - \geq Rs. 3653, II - Rs. 3652- 1826, III - Rs.1825-1096, IV - Rs.1095-548, V - \leq Rs. 547, based on per capita monthly income in Indian rupees).

Sample size was 493. Sampling technique was census population of students. Out of 550 students 493 were available to provide complete information in one to three visits.

Outcome variable was quality of life (anxiety, vitality, depressed mood, self control, positive well-being, general health). Explanatory variables were semester, age, gender, religion, residence, per capita monthly income (PCMI), type of family, hobby, siblings, parents, disease or disability. May and June, 2012 was the study period for designing the study, questions formulations, pre-testing, data collection, compilation, analysis and interpretation.

Data collection procedure:

Data collection was done through self-administered questionnaire and psychological general well-being (PGWB) scale.^{5, 6} Their verbal informed consent was obtained. Participation was voluntary and anonymity was maintained. The students were approached and the questionnaire explained to them properly before filling in. The questionnaire was distributed and ten minutes were allotted for filling the sheets; consisting of twenty two questions. The students were asked to complete the questionnaire in a class at the end of a lecture and return them to the author in the same session. In this manner 493 filled sheets were available for data compilation.

Inclusion criteria:

All the students who were present and gave the consent on the day(s) of data collection.

Exclusion criteria:

1. The students who refused to answer the questions were excluded. 2. The students who were unavailable at the time of data collection. The students were approached three times for data collection.

Data management and statistical analysis:

In the current study, there were no missing data on any of the measures, and therefore, procedures for handling missing data were not followed. All analyses were performed with SPSS 10.0 Software. Total scores for PGWB were calculated and analysed by age, gender, study year, religion, and residence, and socio-economic status, type of family, hobby, sibling and presence of illness. Frequency tables were used to calculate the prevalence rates of demographic variables. For non-parametric variables, chi-square tests were conducted; $p < 0.05$ was considered significant.

Institutional Ethics Committee approval: The study was approved by the Research Ethics Committee of the educational institution.

Results:

We received 493 completed questionnaires, representing a response rate of 89.64%. Majority of students were from 2nd semester, followed by 4th, 6th and 8th semester. Maximum students (65.5%) were of the age group 20-23 years followed by 17-19 years (32.9%) and > 23 years (1.6%). Male and female student ratio was 338 (68.6%): 155 (31.4%). Most of the students were Hindus (80.4%) followed by Muslims (14.0%) and others (5.6%) included Christians, Jains and Santhali. Most of the students (62.9%) were hostelites, followed by day scholars (29.4%) who availed public modes of transportation. 7.7% students travelled through private vehicle and /or by walk. Socio-economic class of students was assessed according to modified B G Prasad scale.⁷ Maximum students (71.2%) came from Class I and Class II and rest belonged to Class III (7.5%), Class IV (12.6%) and

Class V (8.7%). Majority of the students (89.7%) came from a nuclear family and rests (10.3%) were from joint or extended joint or three generation family. Broken or problem family was not found. Most of the students (68.4%) were found with one or multiple hobby. Common hobbies were social networking (face-booking), games like cricket, table tennis. 59.2 percent of students had sibling. Among them, majority had only one sibling. Few students (10.6%) were found with one or more physical illnesses.

Students of all semesters had a similar pattern of score distribution. Most of the students (66.7% to 69.8%) in 2nd, 4th and 6th semester had earned high score [Figure 1]. But when we compared with score of 8th semester, a relative drop was seen in the proportion of students (52.7%) in high score category. Also, there was one student who had earned a low score (severe depression) in the 8th semester. A sizable amount of students (33.8%) were with depression.

Up to the age of 23 yrs, majority of the students (63.6% to 68.1%) had a high score. But among students of age > 23 yrs most students had middle score (moderately depressed). However, the number of students of age > 23 yrs is very less. Students of both genders had a similar pattern of score distribution. Majority (65.9%) had a high score (normal).

Students of all religions had a similar pattern of score distribution. But students of Christianity and others had relatively more percentage (41.2% to 45.5%) of middle score (moderately depressed). It should be worthily noted that the number of students in these category was low.

Students in all categories of residence (hostels and homes) had a similar pattern of score distribution. Majority fell in high score category (normal).

There was little difference in scores on the basis of mode of travel to college

(Mode of travel: Foot / car / taxi / Bus / Train / Bus and Train) ($\chi^2 = 1.53$, $df = 3$, $p = 0.67$). The difference was not statistically significant.

Students of all income groups have a similar pattern of score distribution. Students of income category IV showed a relatively higher proportion of high score ($\chi^2 = 4.52$, $df = 3$, $p = 0.21$). The difference in the high scores among the categories (socio-economic class) was found statistically not significant.

Students coming from a Nuclear family had a relatively higher proportion of high score.

The difference in the high scores among the two categories (nuclear and joint families) was found statistically not significant ($Z = 1.66$, $p > 0.05$, $OR = 1.6$, Cornfield 95% $CI = 0.90 < OR < 3.14$, $\chi^2 = 3.08$, $p = 0.0794735$).

The difference between high scores in presence or absence of hobby was statistically significant ($Z = 1.97$, $p < 0.05$, $OR = 1.50$, Cornfield 95% $CI = 0.99 < OR < 2.26$, $\chi^2 = 4.04$, $p = 0.0443895$).

Those who don't have a hobby had a relatively higher proportion of middle score (moderately depressed).

Students with siblings and without siblings were found with a similar pattern of score distribution. Most students had a high score (normal), whether they had sibling(s) or not ($\chi^2 = 1.58$, $p = 0.20$). The difference was not statistically significant.

Those who suffered from any disease/disability had a higher percentage of middle score (moderately depressed) ($\chi^2 = 1.03$, $p = 0.31$). The difference was not statistically significant.

Discussion:

With the advent of globalization and economic boom, the developing nations are also slowly moving to life style diseases. More and more competition in every field has threatened the economic stability of an individual, thus leading to stress and psychological morbidity. This competition is on continuous rise in medical field and this has lead to stress

which is impairing the quality of life in medical students. This negative effect of long and tiring medical education on the psychological status of students have been shown in several studies.¹⁰ As the studying class increases, the prevalence of depressive disorders increased significantly. In our study, students of 2nd, 4th and 6th semester had high scores 222, while those in the 8th semester had low scores without any statistical significance; similar to another study by Souza et al among undergraduate nursing students where the scores did not differ according to year of training.¹⁹ However, in that study, fourth-year group obtained significantly lower scores than the students from all the other years of training. Another studies on HQOL of medical students by Paro et al,¹³ Karaglu et al,¹¹ Supe et al¹³ and Kumar et al¹⁶ revealed similar result where students in years 2, 3, 4 and 6 had lower scores of HRQL compared with the incoming year 1 group. This may be due to greater fear of not attaining their goal of being a doctor; may be due to excessive load of both para-clinical and clinical subjects as compared to only preclinical subjects in first year or may be due to competition for the postgraduate seats. However another studies by Singh et al at North India,¹⁴ Inam et al at Ziauddin Medical University¹⁵ and Sidana et al at Delhi¹⁷ revealed opposite picture where the scores were significantly lower in 1st year and 2nd year, as compared to 3rd and 4th year students.

In this study no gender bias of PGWB score was found; probably indicating the emerging trend of social empowerment amongst females and the increased self-esteem, similar to other studies, among medical students by Mahawar et al at Indore,¹⁰ Supe et al at Mumbai¹³ and Sidana et al at Delhi.¹⁷ The finding was dissimilar to other studies where female students had significantly lower scores than male.^{3, 9, 14, 15} However, one study among medical students

revealed opposite result, where male students were more depressed.¹¹

In the present study, students of all income groups had a similar pattern of score distribution. There was no statistically significant correlation between PCMI and the majority of the domains and components of the PGWB which was similar to a study carried on undergraduate medical and nursing students.^{3, 9, 15}

Staying away from home did not affect the scores in our study suggesting possibly that social support from peers was adequate to compensate for the loss of social support from families amongst hostel residents. Our study result was consistent with the findings of other studies^{3, 9, 13, 15, 16, 18} among medical and nursing students. In contrast to this, a study by Pekmezovic T et al among university students showed different result where students who lived with parents had statistically significantly higher scores.¹² In this study, there was no significant statistical difference in the scores on the basis of mode of travel to college. Mumbai study by Supe et al^{13, 18} obtained similar result.

There was no significant difference amongst subjects from nuclear or joint families in the present study probably suggesting that the nuclear families can provide the necessary social support to the individuals and that support which was previously provided by various members of joint families was found dissimilar with result of another study^[19] where students from joint family were less depressed compared to those from nuclear family. Students had high scores irrespective of presence of siblings in the present study, which again probably suggests that social support in present times is probably provided by other family members and peers. This was comparable to findings of some prior Indian studies.^{15, 17, 18}

There was a significant statistical difference between students with no hobby or with hobbies. This probably suggests that hobbies may to some extent help in

countering the onset of depression in medical students. Sometimes depression co-exists with a major illness or is a reaction to the illness.²⁰ But our study revealed no such co-relation.

Conclusions:

Students of all semesters had a similar pattern of score distribution. Among students of age > 23 years, moderate depression was found in higher ratio. Further studies are suggested to investigate the possible contribution of active teaching-learning methodologies and continuous psycho-pedagogic support, aiming for a better formation and the improved professional performance of those students in risk situations.

Limitations:

The limitation of this cross-sectional study was inability to draw cause-effect associations between the studied variables. No data on psychological status of students before entering medical school and population based data in India were available to compare our results with general population. Due to time constraint, perceptions of some of the students could not be obtained. Unavailability of some students forced us to shrink the sample size. Field of data collection had to be narrowed down to keep the questionnaire short. Identification and approach for treatment of the depressed student was not made.

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Table 1: Distribution of students according to residence and PGWB score (n = 493)

Score	Residence				Total
	Hostelite (%)	Day scholar			
		Mode of transportation			
		Public (%)	Private (%)	Walking (%)	
Low		1 (0.7)			1 (0.2)
Middle	101(32.6)	50 (34.5)	6 (40.0)	10 (43.5)	167 (33.9)
High	209 (67.4)	94 (64.8)	9 (60.0)	13 (56.5)	325 (65.9)
Total	310 (100.0)	145 (100.0)	15(100.0)	23 (100.0)	493 (100.0)

Table 2: Distribution of students according to socio-economic class and PGWB score (n = 493)

Socio-economic class (Category)	Score			
	Low (%)	Middle (%)	High (%)	Total (%)
Class I	1 (0.6)	83 (37.6)	136 (61.8)	220 (100.0)
Class II	0	41 (31.3)	90 (68.7)	131 (100.0)
Class III	0	14 (37.8)	23 (62.2)	37 (100.0)
Class IV	0	13 (21.0)	49 (79.0)	62 (100.0)
Class V	0	16 (37.2)	27 (62.8)	43 (100.0)
	1 (0.1)	167 (33.9)	325 (66.1)	493 (100.0)

Table 3: Distribution of students according to type of family and PGWB score (n = 493)

Family	Score			Total
	Low	Middle	High	
Nuclear (%)		145 (32.8)	297 (67.2)	442 (100.0)
Joint (%)	1 (1.9)	22 (43.1)	28 (55.0)	51 (100.0)
Total (%)	1 (0.20)	167 (33.9)	325 (65.9)	493 (100.0)

Table 4: Distribution of students according to hobby and PGWB score (n = 493)

Hobby	Score			Total
	Low	Middle	High	
No (%)		63 (40.4)	93 (59.6)	156 (100.0)
Yes (%)	1 (0.3)	104 (30.9)	232 (68.8)	337 (100.0)
Total (%)	1 (0.2)	167 (33.9)	325 (65.9)	493 (100.0)

Table 5: Distribution of students according to presence of siblings and PGWB score (n = 493)

Siblings	Score			Total
	Low (%)	Middle (%)	High (%)	
No		62 (30.8)	139 (69.2)	201 (100.0)
Yes	1 (0.3)	105 (36.0)	186 (63.7)	292 (100.0)
Total	1 (0.2)	167 (33.9)	325 (65.9)	493 (100.0)

Table 6: Distribution of students according to any disease/disability and PGWB score (n = 493)

Disease	Score			Total
	Low (%)	Middle (%)	High (%)	
No	1 (0.2)	146 (33.1)	294 (66.7)	441 (100.0)
Yes		21 (40.4)	31 (59.6)	52 (100.0)
Total	1 (0.2)	167 (33.9)	325 (65.9)	493 (100.0)

“ You cannot achieve environmental security and human development without addressing the basic issues of health and nutrition.”

Gro Harlem Brundtland

“I've always believed fitness is an entry point to help you build that happier, healthier life. When your health is strong, you're capable of taking risks. You'll feel more confident to ask for the promotion. You'll have more energy to be a better mom. You'll feel more deserving of love.”

Jillian Michaels

Original article

A Study to evaluate Patient expectation and satisfaction in a tertiary care teaching Hospital.

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Abstract

Background: Patients satisfaction is an important component of the health care industry in this competitive modern era. The concept of patient satisfaction is also rapidly changing and the hospitals are using variety of techniques to improve patient care and organizational efficiency.

Study Design: The study design was cross-sectional.

Methodology: A total of 422 Patients, attending the Out Patient Department of GSMCH, Banur were randomly selected and a questionnaire was developed to evaluate patient satisfaction about the outpatient department services, logistic arrangement in the outpatient departments, perception about the performance of staff, behavior of staff, support service and any other suggestions of patients.

Results: 80% patients expected the physicians to discuss their problems with them, 100% patients expected to be physically examined. 76% respondents expected their physician to be specialist, whereas 09% respondents said that they were unable to judge a physicians clinical competence. Technically competent doctor was rated as the most important attribute of the treating physician for patient satisfaction.

Conclusions: In this study, it is found that majority of the patients are satisfied with the services provided. They were satisfied with the guidance, logistic arrangements, support services, nursing care, Doctors consultation etc. and satisfaction is the desired outcome of every hospital.

KEY WORDS: Hospital; Outpatient department; Expectation; Satisfaction

Introduction

In the perspective of health care, patient satisfaction has been defined as a combination of experiences, expectations and needs perceived.¹ It has also been defined as the patients' subjective evaluation of their cognitive and emotional reactions as a result of the interaction between their expectations regarding ideal care and their perceptions of the actual care.²

There is a strong connection between health service quality perceptions and patient satisfaction. Only when the health service providers understand what exactly the patient wants when he says that he wants quality, will they be able to satisfy their patients and only then will it be a successful hospital. Hence it is essential to understand the dimensions of quality that affects patient satisfaction.

The hospital market has today changed from a sellers' market to a buyers' market, where the patient is all-important. In order to achieve patient satisfaction, the hospital has to develop itself technologically, as well as become more service-oriented.

Patient satisfaction depends upon many factors such as: Quality of clinical services provided, availability of medicines, behaviour of doctors and other health staff, cost of services, hospital infrastructure, physical comfort, emotional support, and respect for patient preferences.

Satisfaction regarding the attitude of providers toward these services is expected to affect treatment outcome and prognosis. There is a need to analyze the

health care system as often as possible. Thus, a research on patient satisfaction can be an important tool to improve the quality of services.^{3,4}

Satisfaction regarding medical care organizations like our tertiary care hospital is important in the provision of services to patients. This study was designed to assess patient satisfaction with regard to clinical care such as the approach of the doctor, examination, education on taking medication, availability of services, waiting time, and cost provided in the outpatient department of our medical college hospital.

The primary goal of the tertiary care hospital is to provide best possible health care to the patients. The modern era where it is the right of every patient to demand best possible care in hospitals, it is the duty of every staff member of the hospital to deliver his optimum efforts to the entire satisfaction of the patient¹ and its assessment will give us an opportunity to find loopholes in our services for future ratification.

Aims and objectives:

1. To find out the level of patient satisfaction related to different parameters of quality health care in a newly found private Medical College and Hospital in Punjab.
2. To understand the expectation of the customers with respect to quality of delivered health care services.

Materials and methods:

Study Design:

The study design was cross-sectional.

Study Population:

The present study was conducted among the patients attending the outpatient department (OPD) of Gian Sagar Medical College & Hospital, Banur, Patiala District, Punjab.

It is a Tertiary care Teaching Hospital catering to urban as well as rural population. This is a 600 bedded Hospital

with a daily OPD patient attendance of about 800 - 1000(approx.)

Sample Size:

The sample size was calculated using the formula, $n = Z^2 (1 - \alpha/2) pq/d^2$ where $Z (1 - \alpha/2) = 1.96$ at 95% confidence; $p =$ prevalence of patient satisfaction, $q = 1 - p$; $d =$ absolute allowable error. For this study, we presumed maximum variability, hence $p = 0.5$; $q = 0.5$; $d = 5\%$. Sample size thus yielded was 384. Adding a 10% for incomplete answers, the total number came out to be 422.

Sampling Technique:

A total of 422 Patients, attending the Out Patient Department of GSMCH, Banur were selected randomly from each of the OPD's of Medicine, General Surgery, Obstetrics and Gynaecology and Pediatrics.

These patients were interviewed using a well-structured questionnaire containing close ended questions was developed. The questionnaire was pre-tested. It covered the information related to patient's socio-economic characteristics, registration process, perception towards availability of basic amenities, behaviour of doctors and other staff, facilities available in pharmacy and dressing room. Data was collected during the months of September and October 2010.

Inclusion criteria:

A "new" or "referred" patient attending the OPD of Gian Sagar Medical College and Hospital, Banur.

Exclusion criteria:

Patients working in the health care facility and follow-up patients attending the OPD of GSMCH, Banur were excluded from the study.

Results and discussions:

The present study was an attempt to assess the expectations & level of satisfaction of the patients with the various aspects of health care. The findings of the survey are quite helpful if they are transformed into actions for improving the quality of health care.

Among the Demographic and socio-economic factors (Table-I), 56% were males as against 44% females. The median age of the patients was 36.4 years. 88% of respondents were matriculate or above. 33% of the respondents were noted to be farmers and 18% were in service.

Analysis of medical care attributes: Expectations vis-à-vis performance perceptions (Table-II) showed that 49% respondents expected consultation time to be 5-10 min and 45% expected 10-20 min.

100% patients at GSMCH expected the physician to listen to their problems and answer their queries, as against 75% who were listened to and 64% who were answered to respectively. This finding could be a potential dissatisfaction causing factor & the physicians need to be sensitized about it. The satisfaction regarding the listening of the complaints was similar to that recorded by Peerasak Lertrakarnnon *et al*,⁵ in their study, while it was higher than that reported by Janko Kersniket *al*,⁶ who found it to be 69.1% .

100% patients expected to be physically examined, but 89% patients reported that a physical examination was done. A physical examination may not be necessary in every visit, but this fact needs to be communicated to the patient who is expecting it nonetheless, and will set his/her mind at rest. In a study by Janko Kersniket *al*,⁶ it was observed 55.3% patients were physically examined.

Expectations of patients related to dietary advice, also called as '*parhez*' was observed to be so well ingrained in the North Indian Psyche, that respondents to the extent of 93% expected their physicians to give them specific dietary advice and health education. This expectation of the patients was met with by 84% of the physicians in this study.

It was seen that 100% patients at GSMCH expected to be referred for investigations, and all 100% patients were referred for investigations. This may possibly be explained by the type of patients visiting this Tertiary care Hospital

– probably being complicated cases requiring a lot of investigations.

Modern medicine is increasingly relying upon investigations and public have come to judge the services by investigations asked for. At the same time some patients feel that treatment in terms of medicines given are more important than ordering investigations. In any case decision for need / no need for investigations is the prerogative of the treating physician and this information should be clearly communicated to the patients in order to allay anxiety of patients. This will decidedly work for improving compliance and result in improved satisfaction.

In a study conducted in a Super Speciality hospital, Thiruvananthapuram, Kerala⁷, India, it was seen that with regard to the time spent by the doctors during consultation 96.5% of the patients were satisfied. With regard to the Doctors behavior 56% said that Doctors were well behaved, compassionate and patient, while 35.5% felt that they were well behaved but would have been better if they were more patient.

As regards the Waiting time outside the OPD, majority of the patients (77%) had to wait for <30 minutes (Table-III). The registration time and waiting time was different from the observation of Dr. Syed Mohamed Aljunid⁸ in his study in Malaysia where the patients waited for 52 minutes on an average. Differences in satisfaction with long waiting time as compared to other studies by Dr. Syed Mohamed Aljunid,⁸ van Udenet *al*⁹ and Mahfouz *et al*,¹⁰ could be attributed to the differences in the perceptions and expectations of the people. Reduction of the waiting time by triage of the patients and sending them to the appropriate doctor would save their time and also provide appropriate treatment. The waiting time and area could also be utilized to provide health education to the people.

Patient satisfaction surveys are useful in gaining an understanding of

user's needs and their perception of the service received. In a survey conducted by Department of Public Health, Ireland the level of satisfaction among the OPD attendees were 94%. Doctors and nurses were perceived as friendly by 61% and 72% and rude by 1% and 1% of patients, respectively. The study highlighted the areas for improvement from the patient's perspective¹¹.

Respondents were asked about their expectation about a doctor's degrees / qualification vis-à-vis their competence (Table-IV). 76% respondents expected their physician to be specialist, whereas 09% respondents said that they were unable to judge a physicians clinical competence.

Respondents were asked to rate the various attributes of hospital services (Table-V) in the order of relative importance as judged by them, with the most important rated as 1 and least important as 5. Good / Technically competent doctor was rated as the most important attribute. According to the respondents a good doctor is one who examines them, listens to their problems, answers their questions, is empathetic, polite, offers specific advice and one who is able to cure them (technically competent). Attitude of the doctors was rated 2nd and physical facilities and sanitation was rated last.

Conclusion:

Patient satisfaction is the desired outcome of every hospital. Patient's satisfaction from healthcare decides the fate of healthcare providers and healthcare delivery system.

Patients attending each hospital are responsible for spreading the good image of the hospital and therefore satisfaction of patients attending the hospital is equally important for hospital management. Various studies about Patient Satisfaction have elicited problems like overcrowding, delay in consultation, proper behavior of staff etc. In this study, it is found that majority of the patients are satisfied with

the services provided. They were satisfied with the guidance, logistic arrangements, support services, nursing care, Doctors consultation etc. However areas showing delay in consultation, need to be explored to elicit the lacunae.

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Table 1: Demographic & Socio – economic data of Respondents (n =422)

Demographic / Socio – economic factors	
Median age of patients 36.4 yrs	
Gender	
Male	56%
Female	44%
Educational level	
Post graduate	08%
Graduate	32%
HSC	23%
Matric	25%
< Matric	12%
Profession	
Service	18%
Business	14%
Factory worker	03%
Farmer	33%
Unemployed	32%

Table 2 : Comparison of expectation & performance levels in GSMCH.

Attributes of service by hospital / physician	Expectations (% of respondents)	Actual performance (% of respondents)
1. Consultation time by physician		
• 5 min	6%	66%
• 5 – 10 min	49%	16%
• 10 - 15 min	18%	02%
• 15 – 20 min	27%	16%
2. Expect physician to listen to problems		
• Yes	100%	75%
• No	0	07%
• Sometimes	0	18%
3. Expect physicians to answer question put by patients?		
• Yes	100%	64%
• No	0	22%
• Sometimes	0	14%
4. Physical examination by physician		
• Yes	100%	89%
• No	0	5%
• Sometimes	0	6%
5. Discussion of problem with patient		
• Yes	80%	84%
• No	20%	16%
6. Health education & dietary counseling by physicians?		
• Yes	93%	84%
• No	20%	16%
7. Reference for investigations		
• Yes	100%	100%
• No	0	0
• Not every time	0	0
8. Attitude / Behaviour of physicians (empathy)		
• Polite & Personal	100%	100%
• Attitude does not matter	0	0%
• Rude & uncaring	0	0%

9. Privacy in physicians chambers		
• Just doctor & patient	50%	56%
• Doctor, Patient & Nurse	30%	31%
• Doctor, patient, Nurse & other patients	0%	02%
• Makes no difference	20%	11%

Table 3: Patient satisfaction regarding waiting area & waiting time in GSMCH

Parameters	% age
1. Signboard to guide	
• Present	56%
• Already know	21%
2. Waiting time	
• <30 min	77%
• >30	33%
3. Waiting area	
• Clean	93%
4. Seats available	
• Enough	94%
5. Overcrowding	
• Present	10%
6. Drinking water available	
• Yes	60%
• No	25%
• Don't know	15%
7. Toilets available	
• Yes	92%
• No	-
• Don't know	08%
8. Toilets cleanliness	
• Yes	88%
• No	12%

Table 4: Expectations about physician's clinical competence / qualification

Expectations	Percentage (%)
• Specialist MD/DM/MCH	76%
• MBBS	15%
• Degree doesn't matter / can't judge competence	09%

Table 5: Rating of various attributes of hospital services in the order of importance as deemed by patients (1 = Most important, 5 = least important)

Attribute	Percentage (%)
• Good physician (technically competent)	1 (68%)
• Physical facilities / sanitation	5 (18%)
• Treatment / Medicine	3 (35%)
• Investigations	4 (32%)
• Attitude of physician& other staff	2 (46%)

Original article

Current status of the ‘rule of halves’ of hypertension: a survey among the residents of slum resettlement colony from east Delhi.

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Abstract

Background: Despite the high prevalence; prevention, detection, treatment, and control of hypertension is still suboptimal and unsatisfactory. The utility of ‘Rule of halves’ of hypertension rule has often been questioned.

Objective: To find out the current status of the validity of the rule of halves of hypertension in 20-59 years population in a slum-resettlement of east Delhi.

Methods: The present study was carried out in the field practice area of the department of Community Medicine, UCMS, Delhi from August 2010 to February 2012. Three hundred and ten (310) subjects aged 20-59 years were selected through multistage systematic random sample. Blood pressure of all the subjects was measured according to JNC VII recommendations. Among the hypertensive-subjects with prior diagnosis of hypertension / high BP were considered as ‘aware’; those with current antihypertensive drug therapy as ‘treated’; and subjects showing SBP<140, DBP<90, and taking antihypertensive medication as ‘controlled’. SPSS ver 17 was used for analysis. Fischer’s exact test was used.

Results: The total prevalence of hypertension according to JNC VII was 17.4%. About 26 (48.1%) of hypertensive subjects were aware of their hypertensive status. Of the hypertensive subjects only 21 (38.9%) were on treatment and the

difference among males and females on treatment was statistically significant. Of those on treatment only 10 (18.5%) subjects had their blood pressure controlled. Out of total 21 (38.9%) who received treatment, 14 (25.9%) were treated irregularly and remaining 7 (13%) regularly.

Conclusion: Detection and control of hypertension in the population of slum resettlement colony of Delhi is unsatisfactory and the ‘rule of halves’ for hypertension seems to be holding true in this population.

Key-words: rule of halves, hypertension, slum area.

Introduction:

It is now established that non-communicable diseases especially cardiovascular diseases (CVD) are major causes of death and disability in low income countries including India.¹ Over 80% of CVD deaths occur in low- and middle-income countries as their populations are more exposed to risk factors, and have less access to preventive efforts.² Hypertension has been reported as seventh contributor to premature death in developing countries.³ High blood pressure (BP) is one of the most important risk factors for CVD, and it has been shown that the reduction of highly or moderately elevated BP levels results in a decrease in stroke and myocardial infarction rates.^{4,5}

Despite the high prevalence; prevention, detection, treatment, and control of hypertension is still suboptimal and unsatisfactory not only in well-developed⁶ countries but also in developing countries like India.³ With a growing epidemic of non-communicable diseases in developing countries, particularly India, data on prevalence, awareness and control of these diseases are of great importance.

'Rule of halves' states that 'half of hypertensive patients are not known to health services (i.e. remain undiagnosed), half of those with known hypertension do not receive any treatment and half of those who are treated, do not achieve adequate control.'⁷ The utility of this rule has often been questioned.⁸ Therefore the objective of the present study was to find out the current status of the validity of the rule of halves of hypertension in 20-59 years population in a slum-resettlement of east Delhi.

Material and methods:

The present community based cross-sectional study was carried out in Nand Nagri, a slum resettlement of East Delhi which comes under field practice area of the department of Community Medicine, University College of Medical Sciences (UCMS), Delhi from August 2010 to February 2012. It has a population of over 50,000 and mostly falling in the category of low socio-economic status.

The published population-based data showed prevalence of hypertension among 20-59 years subjects from Delhi's JJ clusters/resettlement colonies to be 27.5%.⁹ Adequate sample size for random sample computed to be 306 at 95% confidence level, at 'p' – 0.275 with absolute precision ('d') of 0.05. After rounding off, over 310 subjects aged 20-59 years were selected through multistage systematic random sample. One sub block was randomly selected from each of the five blocks of the study area. Sampling unit was a household, a household was randomly selected from first 20

households (sampling interval for 5%). Thereafter, starting from that household, every 20th household was selected. All the 20-59 years subjects, residing in the selected household for 6 months or more, were included in the study. If there were no eligible subject in the selected household – or the house was closed for 3 consecutive visits, it was replaced by a contiguous household without disturbing the allocation of next 20th sampling unit.

Blood pressure of all the subjects was measured according to JNC VII / American Heart Association (AHA) recommendations. JNC guidelines¹⁰ were followed for defining awareness, treatment and control of hypertension. Among the hypertensive's - subjects with prior diagnosis of hypertension/high BP were considered as 'aware'; those with current antihypertensive drug therapy as 'treated'; and subjects showing SBP<140, DBP<90, and taking antihypertensive medication as 'controlled'. Relevant socio-demographic data of the individuals was also recorded. Ethical committee approved the study. Informed consent was obtained from the study participants.

The collected data was entered in Microsoft Excel. Coding of the variables was done. Statistical Package for Social Sciences, version 17 was used for analysis. Interpretation of the collected data was done by using descriptive statistics like percentages and means. Fischer's exact test was used.

Results:

The total prevalence of hypertension according to JNC VII was 17.4%. About 26 (48.1%) of hypertensive subjects were aware of their hypertensive status. Of the hypertensive subjects only 21 (38.9%) were on treatment and the difference among males and females on treatment was statistically significant. Of those on treatment only 10 (18.5%) subjects had their blood pressure controlled. Out of total 21 (38.9%) who received treatment, 14 (25.9%) were treated irregularly and remaining 7 (13%)

regularly. Among irregular treatment receivers, proportion of females was noticeably high (42.8%) as compared to males (7.7%) though the difference was not statistically significant. (Table 1) (Figure 1)

About 15 (36.6%) subjects in the age group 50-59 years were hypertensive. While 8 (5.8%) subjects of 20-29 age group were hypertensive ($p=0.000$). Awareness was found in 10 (66.7%) subjects in age group 50-59 years and 1 (12.5%) subjects in 20-29 years age group. About 9 (60.0%) subjects in 50-59 years age group were taking treatment as compared to 0 (0.0%) subjects in 20-29 years age group. About 4 (26.7%) subjects each in the age group 50-59 years and 40-49 years had their blood pressure controlled. (Table 2)

Discussion

The rule of halves of hypertension was put forth way back in 1990 based on the findings of a cross-sectional community based survey conducted in Scotland.³ Various authors across the globe have often raised an issue regarding the validity of this rule from time to time. However studies from Sweden¹¹ and Italy¹² have confirmed that rule of halves is still valid in their population. This is in contrast to the study by De Henauw S¹³ who reported that the rule of halves is no longer valid in Belgian adult population.

Another report from Finland⁸ which analysed 14 years (1983-1997) publications on hypertension reported that the rule of halves is no longer valid in industrialized countries but rule might be valid for developing countries. In our study, we found that the rates of awareness, treatment and control were 48.1%, 38.9% and 18.5% respectively.

Not surprisingly, the rates of awareness and treatment were much lower in the developing countries as compared to the developed countries. This can be explained by the fact that the price of the antihypertensive medication can be extremely high relative to local income

thus making it unaffordable to most hypertensive subjects. This comes in agreement with Strasser T who pointed out the cost difference of antihypertensive drug treatment among various countries.¹⁴

In the present study we observed that the prevalence of hypertension was more among males as compared to females. This result is in cohort with other studies from Greece¹⁵ and Canada.¹⁶ This finding can be attributed to the fact that male gender has relatively more access to the health care services. Due to this selective access to medical examinations, men get more frequently screened than women. This observation is in contrast to the study by Tazi MA et al from Morocco¹⁷ (30.2% for men vs 37.0% for women).

It was observed in the present study that females received more (42.8%) irregular treatment as compared to males (7.7%). Several reports on status of gender analysis on utilisation of health care services from various parts of our country have shown that females usually have less access to health care as compared to male counterparts.¹⁸

Regarding gender differences in the areas of awareness, treatment and control rates, women achieve better awareness, treatment and control rates than men. This study also confirms the results concluded by other studies from France and Israel.^{19,20}

It was found in this study that study subjects in the age group of 50-59 years had maximum prevalence of hypertension than any other age group. The prevalence was 5.7%, 19.3%, 31.9% and 36.6% in age groups 20-29, 30-39, 40-49 and 50-59 yrs age group, respectively. The progressive increase of hypertension prevalence with age is a typical finding in all the related studies.^{15,21}

It was seen that the levels of awareness and treatment increased many fold from the younger to the older age group. A probable explanation for this rise in awareness could be that young subjects had never measured their BP before. As far

as treatment is concerned, this difference could imply that young people usually assume that suffering from 'hypertension' is a disease of older age.

The reasons for the failure to control high BP levels adequately are complex to understand. Doctor's perceptions of BP control are more optimistic than reality. Majority of physicians blame poor patient's compliance as the main cause for treatment failure, while most patients claim to be compliant and blame the lack of efficacy and side effects.²²

In the view of low levels of awareness, treatment and control presented in the present study it can be concluded that the detection and control of hypertension in the population of slum resettlement colony of Delhi is unsatisfactory and the 'rule of halves' for hypertension seems to be holding true in this population.

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Table 1: Sex wise distribution of burden of hypertension.

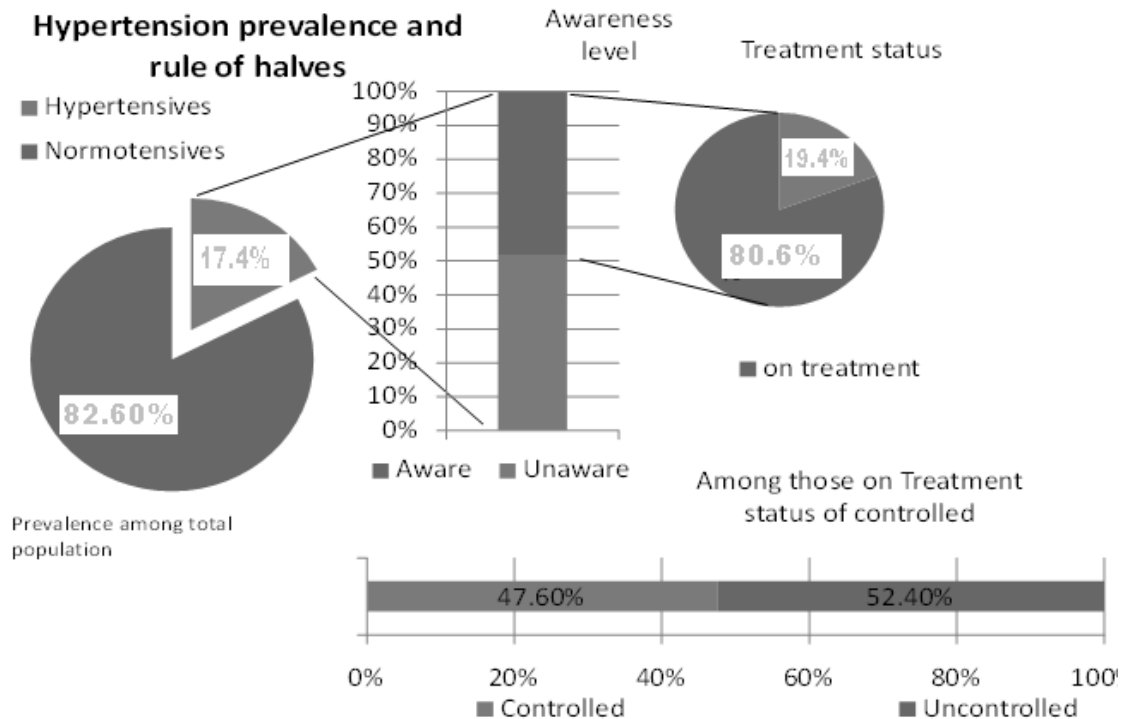
Gender	No.	HT	Aware	Treated (total)	Treated (irregular)	Treated (regular)	Under Control
N= HT by JNC VII							
Male	146	26 (17.8)	8 (30.8)	4 (15.4)	2 (7.7)	2 (7.7)	2(7.7)
Female	164	28 (17.1)	18 (64.3)	17 (60.7)	12 (42.8)	5 (17.8)	8 (28.6)
Total	310	54 (17.4)	26 (48.1)	21(38.9)	14 (25.9)	7 (13.0)	10 (18.5)
p (χ^2)		0.991 (ns)	0.014 (s)	0.020 *(s)	0.061 *(ns)	1.000 *(ns)	0.458 *(ns)

Figures in parenthesis indicate percentage, *Fischer’s exact test used.

Table 2: Age wise distribution of the burden of hypertension

Age	No.	HT	Aware	Treated (total)	Treated (irregular)	Treated (regular)	Under Control
20-29	139	8 (5.8)	1(12.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
30-39	83	16 (19.3)	7 (43.8)	6 (37.5)	6 (37.5)	0 (0.0)	2 (12.5)
40-49	47	15 (31.9)	8 (53.3)	6 (40.0)	2 (13.3)	4 (26.7)	4 (26.7)
50-59	41	15 (36.6)	10 (66.7)	9 (60.0)	6 (40.0)	3 (30.0)	4 (26.7)
Total	310	54 (17.4)	26 (48.1)	21 (38.9)	14 (25.9)	7 (13.0)	10 (18.5)
p (χ^2)		0.000 (s)	0.096 *(ns)	0.291 *(ns)	0.056 *(ns)	0.144 *(ns)	0.923 *(ns)

Figures in parenthesis indicate percentage, *Fischer’s exact test used.



Letter to editor

Gender Mainstreaming in Medical Education- A Feedback from Medical Educators

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Abstract:

Methods: This paper discusses the feedback gathered from 22 senior medical educators who participated in the three days workshop to sensitize them about ways in which gender influences health. Five outcome parameters; viz. their expectations, course material, logistics, duration of the course and additional inputs required are discussed.

Results and Conclusion: There were suggestions to include topics on masculinity, adolescent sexuality and transgender issues. Most of them felt that the workshop had made a difference to them, sensitized them and would facilitate working as change agents. Regular follow up with participants and conducting periodical workshops was a felt need.

22 senior medical educators (12 females and 10 males) from six Government Medical Colleges of Gujarat were deputed by the state government to participate in the workshop. The workshop was divided into three modules; Concept, Application and Advocacy and was spread over three days. The main topics covered were; gender as social determinant of health, concepts and tools for gender analysis in health, rights based approach to health, masculinity and sexuality, gender based violence, and applying gender analysis to health information.

A semi structured questionnaire that included open-ended questions was designed by experts to get feedback from participants regarding the workshop at the end of third and last day.

We observed that, out of the 22 participants, 16 felt that their expectations were met adequately. Almost all participants were satisfied with the overall balance of topics and materials in the course; however a few felt that repetitions could be avoided at places. They mentioned the sessions in order of usefulness as; 1) Applying gender analysis to health information. 2) Rights based approach to health. 3) Integrating a gender & rights perspective in health care system. 4) Gender & Sexuality. 5) Gender as a social construction, Gender in STD / HIV. 6) Gender bias in research & Medical ethics.

Majority of the participants felt that the facilitators had good interaction and tried their best to make the sessions participatory. When asked, do you think there are any ways in which the course has

Sir,

Women and men may respond differently to treatment, have different access to health care and be treated differently by health providers^{1,2}. Female patients often feel disappointed in their encounters with health care.³ It is medical education and training that informs individual practice and the delivery of health services. Teachers are weighty messengers not to be ignored when planning interventions and changes in medical education. We report feedback gathered from the participants of a state level workshop organized by department of Preventive and Social Medicine (PSM), of a Medical College of Gujarat state, located in western India. The objective being; to sensitize medical educators to ways in which gender influences health.

changed you? One participant had put it like this, *“I was doing something related to gender issues subconsciously but now I shall consciously make more efforts in this direction. Others said, we can see gender as one of the factors & we can now bring in changes in ourselves, family and community. We have been sensitized to gender issues in medical research and shall do our best to integrate and implement gender issues in our day to day practice”*. It has provided us with a different angle to look at. As said by one, *“It has made us aware to be “tender at gender”, at personal level & professional level”*.

To conclude, the feedback given by participants helped identify their expectations and it is interesting to note

that majority of them expressed that the expectations were met adequately. Majority of the participants felt that all the sessions were valuable and useful. It is important to note that most of them felt that the workshop had made a difference to them in one way or the other to enable them to work as change agents.

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“Fixing health care and fixing the economy are two sides of the same coin.”

Ron Wyden

The bottom line is that the human body is complex and subtle, and oversimplifying - as common sense sometimes impels us to do - can be hazardous to your health.

Andrew Weil

“Having good health, being able to breathe and be happy, that's one of the most beautiful gifts.. I'm just telling you from my heart, I'm so in love with life. “

Roy Ayers

Letter to editor**Field Report by Regional Child Survival Officer, Gujarat**

Harsh Shah, Regional Child Survival Officer, Surat Region

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Introduction:

To raise health needs is the difficult task in Health as we are not talking about single entity but so many simultaneous variables defines Health. Here I am sharing you one of my field observation of last year November 2012 of Bhavnagar where I was working as a Regional Child Survival Officer under Additional Director (FW), Gujarat. Pithalpur is one of the Village in Talaja Taluka, Bhavnagar District, Gujarat State. It is located 60 kms away from Bhavnagar and 231 km distance from Gandhinagar. Pithalpur PHC is not up to marks according IPHS standard and barring 21 villages of Talaja Taluka. I visited this PHC on 29/11/2012 for the infant death review and final conclusion was death due to diphtheria with diagnostic laboratory confirmation and from Medical officer's report of the PHC.

During my Investigation I found, no vaccine was given to the child and it was home delivery. As per talk with MO PHC Dr. Narendra and FHW+ ASHA worker, I found the PHC barring villages have high migration ration and many children remained unvaccinated because of culture and customs of locals plus their migration to this village.

Work Done

I requested MO PHC and field staff to conduct a survey to know how many children were not vaccinated and what are the reasons so as to identify the gaps and put efforts in needed direction. After survey we found 186 children were unvaccinated with no vaccine was taken till date (some of them had taken OPV) and many are suffering from more than 6 spells of continuous illness through the year. So after getting the data on their reasons for no vaccination, I and MO PHC took help of local leaders and elders of the

specific communities and mobilize the children for vaccination as campaign basis for one week. Mamta Abhiyan was there to communicate and produce trust among the beneficiaries to reduce their fears. Still after efforts and limitation, we were able to vaccinate only 78 (41.9%) children. I requested MO PHC to cover the children if not migrated by taking help of local leaders, Sakhi Mandal and our health team. I also facilitated efforts from Taluka Development Officer and Taluka Health Team. Next approach was to catch and cover them through social mobilization by ASHA and AWW. So with district officials we planned for intensified trainings and I had facilitated afterwards training of front line workers from district level and block level on every aspects immunization and micro planning of VHND session.

Short Analysis of Data

Facility	Pithalpur PHC, Talaja Block, District: Bhavnagar
Villages	21
Population	39787
Infant deaths reported till Nov 2012	15
Maternal deaths	0
No. villages had unvaccinated children	17
Total unvaccinated children	186

The Mean age of the unvaccinated children was 23.6 months with minimum age starts from 2months to 59 months. Out of them 114 were girls and 72 were boys. The data revealed the reasons for denial of vaccinations was 54.3% due to culture and customs (Mataji ni chundadi), 30.1% due

to fear of being diseased and 15.5% due to migration.

Conclusion:

In recent years, Govt of India is putting efforts in the direction to achieve full immunization over 85% - 90% but still according to CES-2009 Gujarat had achieved 56% and according to HMIS data from GOI on Jan – 67.7% full immunization. The reasons are many not to achieve full immunization and to catch drop outs and to include left outs into immunization schedule. Last year we emphasized on Immunization Year and this year also we are organizing special immunization weeks. But still we have to achieve lot more.

Few learning points, I extracted from my observation of Pithalpur to achieve higher coverage

- Revised and strengthen the micro plan of VHND session.
- Special Plans for high risk and hard to reach areas.

- Adequate logistic and cold chain management from the PHC level.
- Communication strategy according to local need and local community.
- Regular supervision by PHC level, Block level and District Level Supervisors.
- Regular reviews of coverage and drop outs in sector + review meetings.
- Proper use of immunization budget line “C” in main PIP and Supplementary PIP.
- Advocacy on inter sectoral coordination in district task force meeting under DM.

I appreciate Dr. Narendrasinh Parmar, MO, PHC Pithalpur, Bhavnagar and his staff for helping us to identify the gaps and probable answers of having low immunization coverage.



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Pediatr. 1984; 51:39-43.

Book: Smith GDL. Chronic ear disease. Edinburgh: Churchill Livingstone; 1980

Chapter in the Book: Malhotra KC. Medicogenetics problems of Indian tribes. In: Verma IC, editor.

Medical genetics in India. vol. 2. Pondicherry: Auroma Entrprises; 1978. p. 51-55.

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