Impact of Health Intervention on Cancer Awareness of Mumbai Urban Slum Population

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Research Article

Abstract: **Objectives:** 1) To assess the awareness about Cancers in an Urban Slum population of Mumbai. 2) To assess the impact of health intervention on awareness of slum population about various Cancers. **Materials and Methodology:** A community based descriptive epidemiological interventional study was conducted at Cheetah Camp urban slum which is a field practice area of Department of Preventive and Social Medicine, of TN Medical College Mumbai during January 2008 to October 2009. Population above 40 years of age were included in this study. Sample was selected using cluster sampling method. The information was gathered by personal interview using semi-structured questionnaires. **Results:** Out of 525 study participants Out of 525 study participants, males were 50.48%. 169 (32.2%) participants thought that cancer is a disease; whereas 109 (20.6%) participants were not able to describe cancer. Regarding general initial symptoms of cancer, 272 (51.8%) don't knew any symptom. Commonest risk factor known to participants (450, 85.7%) was tobacco consumption. Awareness of participants about prognostic factors, screening facilities, screening centres of cancers, treatment centres of cancer was very poor. After health intervention improvement in the knowledge of study participants about various cancers was seen. **Conclusion:** Awareness of study participants about cancers was very poor. There is a need for awareness generation programs to educate population about various common cancers. Propagation of correct messages and promotion of early detection of cancers should be stressed.
Keywords: Awareness, Cancer, Health Intervention, Urban Slum.

1. Introduction

In both developed and developing countries non-communicable diseases are assuming increasing importance among the adult population. Cancer is a group of disorders characterised by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. Most cancer cells eventually form a lump or mass called a tumour and are named after the part of body where the tumour originates. Cancer has become one of the main health problems in the present era.

Though the knowledge about the prevention and treatment of cancer is increasing, yet the numbers of new cases grow every year. Cancer afflicts all communities worldwide. Approximately 10.9 million new cases are diagnosed with cancer, 6.7 million deaths due to cancer every year; 24.6 million persons were living with cancer in the year 2002[1]. If the trend continues, 16 million people will discover that they have cancer in 2020, two-thirds of them in newly-industrialized and developing countries, and the number of deaths would rise to 10.3 million unless we act promptly[2]. Limited or nonexistent resources for prevention, diagnosis and treatment of cancer are responsible for more than 70% of all cancer deaths which are occurring in low- and middle-income countries. Current projections suggest that total cancer burden in India for all sites will double by 2026[3]. In terms of incidence, common cancers worldwide are lung cancer (12.3% of all cancers), followed by breast cancer (10.4%) and colorectal cancers (9.4%).

If cancer can be detected early, treatment may be curative. In 1970s the Government of India designed primary and secondary prevention strategies for the control of cancer. The major thrust area of cancer control programme included – public education, treatment, palliative care and training facilities for human resource development. Under the National Cancer Control Programme such efforts were envisaged to be carried out through the district cancer control projects for educating the people about the sign, symptoms and early identification of most common cancers.

Every country, regardless of resource level, can take steps to curb the cancer epidemic, save lives and prevent unnecessary suffering[4]. Cancer prevention should also be considered in the context of other prevention programmes because important cancer risk factors – such as tobacco use, unhealthy diet, physical inactivity and obesity – are risks for other chronic diseases. A cancer screening programme is a far more costly and complex undertaking than an early diagnosis programme. Therefore, where resources are limited, and where the majority of cases are diagnosed in late stages; early diagnosis of the most frequent cancers, linked to appropriate treatment, is likely to be the best option to reduce premature deaths and suffering due to cancer. Where the necessary resources are available, screening for cancers could be advocated, especially if there is high morbidity and mortality from such cancers[5].

It is necessary that people are aware of early warning signs and symptoms, so that they seek appropriate interventions at proper time. Assessment of knowledge in this respect amongst the people would clearly identify the need in this respect and support appropriate planning towards increasing the level of knowledge amongst people.

1. Material and Methodology

This Community based Descriptive epidemiological interventional study was conducted from Jan 2008 to October 2009 in the catchment area of urban health centre, Cheetah camp which is the field practice area of dept of P.S.M., Topiwala National Medical College and B.Y.L. Nair Ch. Hospital Mumbai, India.

Cheetah camp Urban Health centre catchment area is divided into 11 sectors and has 3 colonies. Total population of the area is 112750, which resides in 22439 households. The number of population above forty years is nearly about 27850 (as per applying national demographic parameters). The health services are rendered by the urban health centre, maternity home, general practitioners and non-government organizations. Municipal Corporation of Greater Mumbai is the primary agency responsible for urban governance and it's Public Health Department for providing preventive, promotive, curative and rehabilitative health care services to the community through Urban Health Centre, Health Post, and Municipal Dispensary under M/East Ward. Study populations were people above age of 40 residing at Cheetah Camp.

Study was carried out with cluster sampling. Total 30 clusters distributed in different sectors and colonies were drawn with sampling interval of 3302.66 i.e. approximately 3303. Each cluster was comprised of 17.5 numbers of samples which in whole numbers comes to 18.

Distribution of clusters in study area

Sectors	Population	Cumulative population	Clusters
A	7650	7650	2
B	10378	18028	3
C	10997	28985	3
D	12812	41797	4
E	11374	53171	4
F	7020	60191	2
G	9350	69541	3
H	1900	71441	0
I	943	72384	0
J	5437	77821	2
K	1962	79783	1
Paylipada	6420	86203	2
Trombay koliwada	7800	94003	2
Mahatma Phule nagar & Dutta nagar	5077	99080	2

Cluster interval = 3302.66 i.e. 3303.

Implementation of study design:
It consisted of following phases
 I – Preparatory phase
 II – Conduct survey
 III - Interventions
 IV – Post intervention impact assessment survey
 V – Development of action plan and documentation

Phase I – Preparatory phase
The necessary approval was obtained from the Dean and The Professor & Head Department of Preventive & Social Medicine TN Medical College, Mumbai, Maharashtra, India. Approval was sought from Ethics committee regarding the study and materials and methods used.

Baseline information of study area, study population and its distribution in sectors was gathered through baseline surveys and health post records. Detailed mapping of the area was done and interview schedule for general population was prepared.

Preformed, pre tested MCQ (Multiple choice question) questionnaire for adult population were prepared. An interview schedule, based on the aim and objectives of study was prepared. A pilot study was conducted in cheetah camp urban slum area of Mumbai. It included 50 people fulfilling inclusion criteria of study. The purpose of pilot study was to refine the questions in the interview checklist to accomplish the desired outcomes as per aim and objectives of the study and calculate sample size for conducting study. There is no data available about knowledge of cancer amongst population. There is no information available on prevalence of cancer in this area, therefore national health and morbidity indicators are applied to this population. Sample size was calculated as mentioned below:

$N = 4pq/L^2$

Pilot study was conducted involving 50 subjects, to revise the actual sample size based on finding of study. Analysis of data collected by pilot study showed that the prevalence of knowledge and awareness about

warning symptoms and signs of cancer amongst population was 16%.

P= prevalence of knowledge = 16%

q=1-p= 84%

L=allowable error=20% of P = 3.2

Sample size=4(16) (84) /10.24= 525

Phase II – Conduct survey

Prior to collection of data collective information regarding the study was given & written informed consent was taken from all the participants. Persons above 40 year of age fulfilling inclusion criteria and selected as sample were interviewed using preformed, pre tested MCQ questionnaire. Data was collected through personal interview by the principal investigator. Time required for each interview was nearly 20 minute.

Phase III. Health Intervention

- Health Education
- Counselling for those with high risk behaviour
- Early detection at UHC (Urban Health Centre)
- Referrals for confirmation of diagnosis and initiation of treatment
- Sensitization of private practitioners to enhance capabilities towards early diagnosis and treatment.
- To strengthen referral linkages with UHC
- Feed back to Private practitioners referring the patients
- Follow up of patients for at least for 6 months after initiation of treatment

Health education was given in sessions and information about warning symptoms, signs, causes and preventive measures for cancer was given. 2-3 sessions were arranged for group of 8-10 people in their locality as per convenient time and place.

Counselling was done in Urban Health Centre through one to one talk. After giving information about high risk factors people with high risk factors were advised to come for counselling. Referrals for confirmation of diagnosis were sent to Sion and Tata hospital (Tertiary Care Hospitals).

Phase IV – Post intervention impact assessment survey

Post intervention survey data was collected and analyzed.

Data Entry and Analysis: Data was entered in MS-Excel, corrected for typographic errors, coded and analyzed using SPSS-15 software, Chi square test was used for comparing the knowledge before and after interventions. Appropriate scoring was done in both pre intervention and post intervention phases. The collected data was numerically coded and entered in Microsoft Excel 2007 and then transferred to SPSS version 15.0 Added data was analyzed with appropriate test like Chi-square test, 't' test to see the association between various parameter, with p value $\leq$ 0.05 considered significant.

Phase V – Development of action plan and documentation

The findings of the present study were compared and discussed with other relevant studies done before and finally conclusion & recommendations are drawn as feasible. Plan of action was developed based on findings of study.

Documentation:

This includes

- Drafting the report of different activities and phases of study.
- Finalization of the draft report.
- Computerized report documentation and using DTP layout.
- Printing and final documentation.

2. Results

Table 1 shows out of 525 participants, males were 50.48% and females were 49.52%. Majority of participants belonged to age group of 40 to 44 years (39.04%). Among the study population, 29.52% were educated up to secondary class followed by higher secondary class 22.47% and primary class 15.80%. Illiterate were 27.23%. As per Modified Prasad's Classification majority of the subjects belonged to Socioeconomic Class IV (lower Middle) 38.47% followed by Class II (Upper Middle) 31.23% and Class III (Upper Lower) 18.85%. Most common source of information for cancer was neighbours 34.45% followed by media 24.79% and friends 24.58%. Only 7.14% of subjects heard the information from medical person.

Table 2 describes awareness of participants about cancer. Improvement in participants' knowledge regarding description of cancer, organs affected and general initial symptoms of cancers was seen after intervention. Similarly table 3 and 4 reveal improvement in participants' knowledge after intervention regarding initial symptoms of oral, lung, oesophageal, stomach, cervical, prostrate and breast cancer.

Table 5 shows tobacco 85.71% before and 99.81% after was most commonly identified risk factor followed by alcohol (73.71%) and (87.62%) before and after intervention respectively. Breast feeding was wrongly identified as risk factor by 11.62% which was corrected by interventions. The most commonly identified warning symptom was non-healing sore or wound before and after interventions. After intervention Hoarseness of voice (82.67%), persistent change in bowel habits (86.1%), prolonged fever (74.86%) and weight loss (69.14%), blood loss through natural orifice

(58.48%) were other identified symptoms showing improvement in knowledge.

Table 6 More subjects became aware of importance of early diagnosis (170 before to 467 after interventions) in prognosis of cancer similar results are found with grade of tumour (84 to 363 before and after interventions) and quality of treatment (239 before to 456 after interventions). Majority 165 (31.4%) of subjects were aware routine modalities like of x-ray, blood investigations and CT scan as the available screening facility, but after intervention this number rose to 342 (65.1%). Also, initially only few people 16 (3%) knew about the importance of self examination of breast but this was bolstered after intervention; 448 (85.3%) people became aware of breast self examination as a screening modality. Government hospitals were the most preferred place recognized as screening centre by study population before intervention (55.62%) and after intervention (91.2%).

Table 7 reveals that majority of people believed that it was possible to prevent or at least reduce the risk of acquiring cancer after interventions. Avoiding tobacco and alcohol consumption, balanced diet and exercise were well known facts for various health issues. Self examination, proper age for marriage and family history were issued which needed correction and same was tried in intervention.

Table 8 shows most recognized centres for treatment were Government hospitals and Tata hospital. Very few 17 (3.2%) were having belief in other unqualified people for treatment. Willingness for screening was increased after intervention. It signifies that the interventions of study, helped in developing right attitudes. Majority of subjects (41.67%) identified family doctor as source of information for self examination while Government hospitals was the least (8.33%) identified source.

Table 1: Socio-demographic profile of study participants

		Frequency
Age in years	44 – 44	205 (39%)
	45 – 49	89 (17%)
	50 – 54	55 (10.5%)
	55 – 59	46 (8.8%)
	60 – 64	50 (9.5%)
	≥ 65	80 (15.2%)
Sex	Male	265 (50.5%)
	Female	260 (49.5%)
Education	Illiterate	143 (27.2%)
	Primary	83 (15.8%)
	Secondary	155 (29.5%)
	Higher Secondary	118 (22.5%)
	Graduate	26 (5%)
Socio-economic status	Class V	10 (1.9%)
	Class IV	202 (38.5%)
	Class III	99 (18.9%)
	Class II	164 (31.2%)
	Class I	50 (9.5%)
Source of information for cancer	Doctor	44 (8.3 %)
	Relative	53 (10.1%)
	Friends	127 (24.2%)
	Media	128 (24.4%)
	Neighbour	173 (33%)

Table 2: Awareness of participants about cancer

	Awareness about cancer	Before Intervention	After Intervention
Description of cancer (n-525)	Cannot explain	109 (20.6%)	0 (0%)
	Disease	169 (32.2%)	6 (1.1%)
	Dangerous disease	66 (12.6%)	14 (2.7%)
	Disease due to tobacco and addictions	22 (4.2%)	23 (4.4%)
	Swelling	22 (4.2%)	23 (4.4%)
	Tumour in various organs	137 (26.2%)	459 (87.4%)
Organs affected by cancers (n-525)	Oral cavity	146 (27.8%)	148 (28.2%)
	Lung	104 (19.8%)	95 (18.1%)
	Breast	74(14.1%)	133 (25.3%)
	Blood	62 (11.8%)	135 (25.7%)
	Cervix	21(4%)	69 (13.1%)
	Any organ of body	144 (27.4%)	345 (65.7%)

	Don't know	160 (30.5%)	0 (0%)
General Initial symptoms of the cancers (n-525)	Weight loss	109 (20.8%)	369 (70.3%)
	Loss of appetite	83(15.8%)	410 (78.1%)
	Fever	103(19.6%)	365 (69.5%)
	Jaundice	14 (2.7%)	138 (26.3%)
	Swelling in axilla or groin	153 (29.1%)	436 (83.1%)
	Any other	25 (4.8%)	63 (12%)
	don't know	272 (51.8%)	1 (2%)

Table 3: Awareness of participants about initial symptoms of Oral, Lung and Oesophageal cancer

Cancers	Initial symptoms of cancer	Before Intervention	After intervention
Oral cancer	Non-healing ulcer	178 (33.9%)	426 (81.1%)
	Changes in fitting of denture	20 (3.8%)	221 (42.1%)
	Altered taste	1 (0.2%)	1 (0.2%)
	Difficulty in opening mouth	105 (20%)	393 (74.8%)
	Bad breath	80 (15.2%)	205 (39.1%)
	Decreased tongue mobility	50 (9.5%)	227 (42.2%)
	White or red patch in mouth	62 (11.8%)	425 (80.9%)
	Any other	10 (1.9%)	51 (9.7%)
	don't know	272(51.8%)	10 (1.9%)
Lung Cancer	Cough of long duration	130 (24.8%)	420 (80%)
	Different sounds while breathing	62 (11.8%)	133 (25.3%)
	Breathlessness	44 (8.4%)	282 (53.7%)
	Chest pain	130 (4.8%)	264 (50.3%)
	Recurrent chest infections	21 (4%)	134 (25.5%)
	Blood in cough	106 (20.2%)	303 (57.7%)
	Any other	12 (2.3%)	8 (1.5%)
	don't know	296 (56.4%)	8 (1.5%)
Oesophageal Cancer	Difficulty in swallowing	111 (21.1%)	455 (86.7%)
	Weight loss in short duration	11(2.1%)	174 (33.1%)
	Indigestion	41 (7.8%)	146 (27.8%)
	Acidity	68 (13%)	212 (40.4%)
	Painful swallowing	63 (12%)	378 (72%)
	Any other	3 (0.6%)	63 (12%)
	don't know	364 (69.3%)	8 (1.5%)

Table 4: Awareness of participants about initial symptoms of stomach, Prostrate, Cervical & Breast cancer

	Initial symptoms of cancer	Before Intervention	After Intervention
Stomach Cancer	Indigestion	35 (6.7%)	193 (36.7%)
	Pain in abdomen	120 (22.9%)	395(75.2%)
	Nausea & vomiting	41 (7.8%)	334 (63.6%)
	Swelling in abdomen	119 (22.7%)	455 (86.6%)
	Any other	0 (0%)	71(13.5%)
	don't know	352 (67%)	11(2.1%)
Prostate cancer	Outlet obstruction	33 (6.3%)	316(60.2%)
	Fullness even after passing urine	12 (2.3%)	269(51.2%)
	Change in ejaculatory pattern	3 (0.6%)	107(20.4%)
	Diminished stream of urine	13 (2.5%)	202(38.5%)
	Pain during micturation	0 (0%)	0(0%)
	Blood in urine	12 (2.3%)	23(4.4%)
	Any other	0 (0%)	0(0%)
	Don't know	491(93.5%)	79(15%)
Cervical Cancer	post coital bleeding/spotting	8 (1.5%)	346 (65.9%)
	Inter-menstrual bleeding	42 (8%)	317 (60.4%)
	Prominent menstrual, post-menopausal bleeding	41 (7.8%)	254 (48.4%)
	Yellowish vaginal discharge	12 (2.3%)	191 (36.4%)
	Back pain	11 (2.1%)	127 (24.2%)
	Any other	0 (0%)	1 (0.2%)
	Don't know	448 (85.3%)	31 (5.9%)
Breast Cancer	Lump or hard area in breast	154 (29.3%)	480 (91.4%)
	Lump in axilla	35 (6.7%)	320 (60.9%)
	Changes in nipple-ulceration or retraction	14 (2.7%)	281 (53.5%)
	Discharge from nipple	7 (1.3%)	201 (38.3%)
	Change in size and shape of breast	14 (2.7%)	248 (47.2%)

	Pain in breast	27 (5.1%)	176 (33.5%)
	Visible veins on breast	0 (0%)	2 (0.4%)
	Any other	0 (0%)	8 (1.5%)
	Don't know	350 (66.7%)	2 (0.4%)

Table 5: Awareness of participants about Risk factors and Warning signs for cancers

		Before Intervention	After Intervention
Risk Factor for cancer (n-525)	Tobacco	450 (85.7%)	524 (99.8%)
	Alcohol	387 (73.7%)	460 (87.6%)
	Sharp teeth&/or ill fitting denture	57 (10.9%)	293 (55.8%)
	Hot & spicy food	86 (16.4%)	277 (52.8%)
	Age(old age)	92 (17.5%)	427(81.3%)
	Occupational factors	101 (19.2%)	410 (78.1%)
	Pollution	195 (37.1%)	391 (74.5%)
	Radiation	75 (14.3%)	383 (72.9%)
	Infection	37 (7.1%)	190 (36.2%)
	Family history	137 (26.1%)	292 (55.6%)
	Genetic disorders/Hereditary	51 (9.7%)	207 (39.4%)
	Obesity	43(8.2%)	121 (23.1%)
	Early marriage	48 (9.1%)	221 (42.1%)
	Early pregnancy	37 (7.1%)	231 (44%)
	Early menarche	29 (5.5%)	323 (61.5%)
	Breast feeding	61 (11.6%)	0 (0%)
	Environmental toxins	156 (29.7%)	265 (50.5%)
Warning signs for cancer (n-525)	Persistent change in bowel habits	110 (21%)	452 (86.1%)
	A sore or wound that does not heal	198 (37.7%)	471 (89.7%)
	Change in wart or mole	86(16.4%)	317 (60.4%)
	Hoarseness of voice	173 (33%)	434 (82.7%)
	Prolonged or frequent fever	136 (25.9%)	393 (74.9%)
	Unusual weight loss or weight gain	136 (25.9%)	363 (69.1%)
	Cracking of skin	4 (0.8%)	7 (1.3%)
	Loss of appetite	161(30.7%)	340(64.8%)
	Blood loss from any natural orifice	111 (21.1%)	307 (58.5%)
	Blackening/ darkening of skin	2 (0.4%)	1 (0.2%)
	Prolonged jaundice	46 (8.8%)	197 (37.5%)

Table 6: Awareness of participants about Prognostic factors, Screening facilities and Screening centres

	Prognostic Factors	Before Intervention	After Intervention
Knowledge regarding the prognostic factors of cancer (n-525)	Age	14 (2.7%)	209 (39.8%)
	Sex	5 (0.95%)	77 (14.7%)
	Early diagnosis	170 (32.4%)	467 (89%)
	Grade of tumour	84 (17%)	363 (69.1%)
	Quality of treatment	239 (45.5%)	456 (86.9%)
	Any other	3 (0.57%)	52 (9.9%)
	Don't know	210 (40%)	2 (0.4%)
Knowledge regarding available screening facilities (n-525)	Screening tests	Before Intervention	After Intervention
	Oral cavity examination	65 (12.4%)	371 (70.7%)
	PAP smear	27 (5.1%)	259 (49.3%)
	Breast self examination	16 (3.1%)	448 (85.3%)
	X-ray/C T scan / Blood investigations	165 (31.4%)	342 (65.1%)
	Biopsy	96 (18.3%)	415 (79.1%)
	Any other	95 (18.1%)	8 (1.5%)
	Don't know	286 (54.5%)	8 (1.5%)
Knowledge regarding available screening centres (n-525)	Screening centres	Before Intervention	After Intervention
	UHC	22 (4.2%)	279 (53.1%)
	Traditional/folk practitioners	5 (0.9%)	28 (5.3%)
	TATA hospital	292(55.6%)	466 (88.7%)
	Private practitioner	48 (9.1%)	322 (61.3%)
	Tertiary level hospital	292 (55.6%)	479 (91.2%)
	Religious leaders' place	2 (0.3%)	0 (0%)
	Any other	1 (0.1%)	0 (0%)
	Don't know	286 (54.5%)	0 (0%)

Table 7: Assessment of participants' knowledge about Prevention of Cancer

	Class	Before Intervention	After Intervention
Knowledge regarding prevention of cancer (n-525)	Yes	260 (49.5%)	515 (98.1%)
	No	265 (50.5%)	10 (1.9%)
	Preventive Measures	Before Intervention	After Intervention
	Avoid Tobacco	425 (81%)	523 (99.6%)
	Avoid alcohol consumption	385 (73.3%)	491 (93.5%)
	Balanced diet	319 (60.8%)	420 (80%)
	Exercise	265 (50.5%)	395 (75.2%)
	Periodic health check ups	303 (57.7%)	494 (94.1%)
	Breast self examination	49 (9.3%)	525 (100%)
	Genital hygiene	165 (31.4%)	433 (82.5%)
Knowledge regarding various preventing measures of cancer (n-525)	Proper occupational environment	95 (18.1%)	312 (59.4%)
	Avoid radiation exposure	68 (13%)	359 (68.4%)
	Vaccine	21 (4%)	201 (38.3%)
	Control of infections	38 (7.2%)	212 (40.4%)
	Proper time of marriage and pregnancy	64 (12.2%)	263 (50.1%)
	Use of condoms	37 (7.1%)	175 (33.3%)
	Use of screening methods	184 (35.1%)	387 (73.7%)
	Extra care in case of family history	126 (24%)	366 (69.7%)

Table 8: Assessment of Participants' knowledge about Treatment and Self examination in cancer

	Treatment Centre	Before Intervention	After Intervention
	UHC	1 (0.1%)	96 (18.2%)
	Tertiary level hospital	300 (57.1%)	508 (96.7%)
	TATA hospital	305 (58%)	466 (88.7%)
Knowledge regarding treatment centres of Cancer (n-525)	Private practitioner	50 (9.5%)	230 (43.8%)
	Traditional/folk practitioners	8 (1.5%)	0 (0%)
	Religious leaders	5 (0.9%)	0 (0%)
	Any other	4 (0.7%)	0 (0%)
	Don't know	91 (17.3%)	0 (0%)
	Willingness for screening	Before Intervention	After Intervention
Willingness of participants for screening of cancers (n-525)	Yes	380 (72.4%)	495 (94.3%)
	No	145 (27.6%)	30 (5.7%)
	Knowledge	Frequency	
Knowledge about self examination in case of breast & testicular cancer (n-525)	No	489 (93.1%)	
	Yes	36 (6.9%)	
	Source of information	Frequency	
	Family doctor	15 (41.7%)	
Sources of information for self examination (n-36)	Govt Hospital	3 (8.3%)	
	Relative	6 (16.7%)	
	Media	12 (33.3%)	

3. Discussion

The present community based descriptive epidemiological interventional study was conducted at Cheetah Camp urban slum during Jan 2008 to October 2009. By employing cluster sampling, 525 individuals above 40 years of age were selected.

Among the subjects enrolled in the study, males (50.48%) and females (49.52%) were found to be nearly equal in number. Prominent age groups of study were age group 40-44 years (39%) followed by age group of 45-49 years (17%). Among the educated subjects, majority (29.52%) of them were educated up to secondary class and 27.23% were Illiterate. Very few subjects were having professional qualification like L.L.B. As per Modified Prasad's Classification[6] majority of the subjects belonged to Socioeconomic Class IV (38.47%). The main occupation was Hand embroidery, Bag making, Fishing, Auto-rikshaw driving and other manual labour.

In the present study 90.67% of subjects claimed to have heard of cancer from different sources. Common sources were neighbours (34.45%) followed by media (24.79%) and friends (24.58%). Only 7.14% of subjects heard the information from doctors. The percentage of population which have not heard of cancer was only 9.33%.The people belonging to this category were mainly elderly (51%) and illiterate (57.1%) people. Somdatta et al[7] found out the television as the most common medium through which women heard about breast cancer .Other sources of knowledge were neighbours and relatives (41%), hospital staff (19%),

print media (9%) and radio (3%). Thus overall sources of information are same in India.

Majority of subjects (44.77%) identified cancer as a disease or dangerous, incurable disease with high mortality. After interventions majority (87.42%) could explain about cancer in a scientific way which was also statistically significant. Better explanation was obtained from educated people, those got information from doctors, media and neighbourhood. Cancer as a disease due to tobacco was response in 4.19% of subjects for which credit can be given to pictorial message given on tobacco products. Oral cavity was the organ site identified by majority of subjects (27.81%) followed by any organ of body (27.43%) and lung (19.81%). After interventions 65.71% subjects marked any organ of body as response of choice. The media coverage and prevalence or sight of patient can be held responsible for oral cancer knowledge.

The knowledge regarding risk factors cancer was improved after interventions. Here also tobacco was held main culprit and tobacco consumers (85.71%) identified as at risk people followed by alcoholics (73.71%). Old age was considered as risk factor by only 17.52% of subjects. After intervention scenario remained near about same with tobacco consumers (99.81%) and alcoholics (87.62%) retained top positions. Alarming fact was that 11.62% subjects thought breast feeding as a risk factor. Many suspected cancer as contagious disease that's why they identified breast feeding risk factor and to some extent family history as a risk factor. Somdatta et al[7] studied awareness of breast cancer in women of an urban resettlement colony and found that only 35% (n=65) of the women mentioned any of the risk factors of breast cancer. Nine women (4.9%) mentioned advancing age as a risk factor, while 12 (6.5%) believed that risk is more at younger age. Eight percent (n=15) believed that taking oral contraceptive can cause breast cancer irrespective of the duration of intake. Forty-five (24%) women believed that breast feeding protects against breast cancer while five women thought breast feeding is a risk factor. Other factors that that were mentioned were obesity and excessive intake of fat. Interestingly, 20 % of the participants believed that trauma to the breast while feeding leads to breast cancer. Darby et al[8] in their study, 'Radon in homes and risk of lung cancer: collaborative analysis of individual data from 13 European case control studies' concluded that collectively, though not separately, these studies show appreciable hazards from residential radon, particularly for smokers and recent ex-smokers, and indicate that it is responsible for about 2% of all deaths from cancer in Europe.

The knowledge regarding initial general symptoms of cancer was improved after interventions. Many subjects became aware of symptoms like swelling in axilla and groin. Knowledge regarding symptoms of oral, lung, stomach and oesophagus were increased after intervention. Awareness was increased about precancerous conditions like leukoplakia and erythroplakia (80.95%) after interventions. Difficulty in opening mouth was preserved as symptom by 20% of subjects before intervention and 74.86% of subjects after interventions. Decreased tongue mobility (43.24%) and changes in fitting of dentures (42.1%) were identified by more subjects after intervention.

Regarding lung cancer, the increased awareness was more useful for patients with associated risk factors like smoking history. Cough of long duration was the most commonly (80%) answered symptom after intervention. Blood in cough (57.71%), breathlessness (53.71%) and chest pain (50.29%) were other commonly answered symptoms. Before interventions also cough of long duration (24.76%), chest pain (24.76%) and blood in cough (20.19%) were commonly identified symptoms. In case of oesophagus cancer difficulty in swallowing was most commonly identified (21.14% of subjects) before interventions and (86.67% of subjects) after interventions. Chronic acidity (12.95% of subjects), painful swallowing (12% of subjects) were other symptoms identified before interventions. While swelling 86.67%, pain in abdomen 75.24%, nausea and vomiting 63.62% were commonly recognised symptoms of stomach cancer by population.

Lachlan et al[9] investigated awareness of nursing staff risk factors for oral cancer, its clinical signs, and could therefore provide a 'screening' service for oral cancer. Over 80% thought oral health checks were important although only 49% performed this task regularly; approximately 70% identified smoking as a risk factor but less than 30% identified alcohol. Awareness of the clinical signs of oral cancer was low with 21% identifying white patches, 15% identifying ulceration and only 2% identifying red patches despite their malignant potential. Thus the awareness was found to be poor.

Knowledge regarding initial symptoms of prostate, cervical and breast cancer were also improved in the study group. Interventions of study were effective in achieving desired effects. Overall knowledge about prostate gland and its cancer was very poor. Before intervention 93.52% of subjects were not aware of symptoms. After intervention, 60.19% identified outlet obstruction, 51.24% fullness after passing urine and 38.48% diminished flow of urine. In case of cervical cancer Post coital bleeding 65.9% was the most common response after intervention, inter-menstrual bleeding was response of 60.38% of subjects and post-menopausal bleeding 48.38%, yellowish discharge 36.38% were other common responses. This increased awareness facilitates to convince people for undergoing screening or undergoing screening by themselves, particularly in shadow of high risk category. The interventions of study, helped in improving the

knowledge regarding symptoms of breast cancer among the study groups. When responses before and after interventions were compared, it was found that the percent of subjects claiming lump or hard area in breast as symptom raised from 29.33% before interventions to 91.43% after interventions. The rise was also seen in responses like lump in axilla (6.67% to 60.95%), nipple ulceration or retraction (2.67% to 47.24%), change in size and shape of breast (2.67% to 47.24%) , discharge from nipple(1.33% to 38.29%).

Aparajita et al[10] in their study, found high prevalence of some important risk factors associated with cancer cervix like age, age of marriage, age of first child birth, parity, family planning practices, genital hygiene and reproductive tract infections in the study population. The same scenario was found in the study population in un-tabulated data. Somdatta et al[7] in their community based, cross-sectional study,' awareness of breast cancer in women of an urban resettlement colony', carried out in a resettlement colony in South Delhi, interviewed a total of 333 women. The mean age was 36 years±15.1 and 46% were illiterate. Only 185 (56%) women were aware of breast cancer; among them, 51% knew about at least one of the signs /symptoms, 53% were aware that breast cancer can be detected early, and only 35% mentioned about risk factors. Awareness about breast cancer was low amongst women in this community. These finding are consistent with the findings of the study. Sophia et al[11].in their study,' Using a Community-Based Outreach Program to Improve Breast Health Awareness Among Women in Hong Kong,' evaluated the effectiveness of a community-based health education program via a mobile van to promote the awareness of breast cancer and breast self-examination (BSE) practice among women in Hong Kong. About half were aware of breast health and breast diseases (53.7%) and breast screening methods (48.6%) before the intervention. It was found that women who had received instruction on BSE practice, and those who were aware of breast screening methods, breast health, and breast diseases were more likely to have had prior BSE practice.

Sophia et al[11].in their study found that most participants (93.3%) indicated their willingness to practice BSE regularly and to pass on the BSE knowledge to their relatives and friends (92%) after intervention. found the outreach health education program has successfully reached women living in the 18 districts in Hong Kong. It appears to be useful in raising the awareness of breast health and BSE practice among the women, but longer term follow-up is required to ascertain its sustainability. These finding of study are matching with the present study.

 Before intervention very few (8, 1.5%) subjects identified non specific symptom like cracking of skin as a symptom of cancer. Subjects came to know about chronicity of cancer symptoms and gradual increase in their severity as compared to other diseases after intervention. Non healing sore (89.71%) was most commonly identified symptom, followed by persistent change in bowel habits (86.1%), hoarseness of voice (82.67%). Chronicity of otherwise common symptoms as a warning for cancer was conveyed to subjects which was reflected by 74.86% subjects identifying prolonged fever, 69.14% weight loss or gain, 64.76% loss of appetite and 37.52% prolonged jaundice as symptom of cancer.

During study it was found that 42.67% of subjects did not believe in treatment for cancer. Many of them shared the belief that cancer is incurable while some had opinion that treatment is too costly to be affordable and is not very effective. This is also bolstered by the fact that very few cancer survivals are known to them; all they might have seen or heard was the mortality of disease. This belief was tried for correction in interventions and importance of early diagnosis and possible cure of cancer was explained to them. After intervention 95.42% participants believed in treatment of cancer.

On inquiring about their knowledge regarding prognostic factor of cancer, it was found that the subject's knowledge improved after interventions. Most common identified prognostic factor was early diagnosis (32.38%) before interventions and 88.95% after interventions. Quality of treatment (45.53% to 86.86% before and after interventions), grade of tumour (17% to 69.14%) were other commonly identified prognostic factor. Quality of treatment was common answer before intervention, after intervention early diagnosis was most common thus people became sensitised about early diagnosis.

Among the study subjects, 55.81% of subjects did not believe in early diagnosis of cancer. The same stigma that cancer is incurable was prevalent. The trend was that any stage when cancer is diagnosed is too late. This was tried for correction in intervention and after intervention 99.62% of subjects approved that early detection of cancer is possible.

Majority of the study population (91.2%) identified government tertiary level hospitals as screening centre, followed by Tata hospital (88.7%). 21.14% subjects were not aware of screening centre before intervention. Very few (0.3%) subjects opined about religious leaders' place as a centre for screening which was later corrected by interventions. The reason for government hospital as preferred centre may be because of socioeconomic condition of population.

Most people recognized government tertiary hospitals and Tata hospital as a centre for treatment. Also, some people (17, 3.2%) believed that untrained people can also treat the patients. Further many people became aware of Tata hospital as a renowned centre for treatment of cancer in the city. Before intervention 49.52% of subjects did not believe in prevention of

cancer this was changed by intervention. Most people believed that it was possible to prevent or at least reduce the risk of acquiring cancer after interventions. Somdatta et al[7]studied awareness of breast cancer in women of an urban resettlement colony. When asked how breast cancer can be prevented seventeen women mentioned regular check-up by a doctor; others said that breast cleanliness, washing nipples regularly, and not wearing underwear (brassier) can prevent breast cancer. This scenario is much similar with current study in before intervention phase.

Knowledge regarding preventive measures of cancer was found to be improved after interventions. People became more aware of the ill effects of tobacco consumption, substance abuse. The importance of balanced diet, regular exercise, maintenance of good genital hygiene was effectively highlighted in the intervention and also it was well absorbed by the subjects. People also came to know about the necessity of periodical health check up. Proper occupational environment requisite was also known to study subjects after intervention. Importance pertaining to timely marriage and pregnancy, use of condoms and screening methods was well understood by the population after intervention.

Adlard et al[12] in their study, Cancer Knowledge of the General Public in the United Kingdom: Survey in a Primary Care Setting and Review of the Literature, conducted a survey of 406 adult patients in a two-centre primary care practice to determine their awareness of risk factors, presenting symptoms, treatments and support services for cancer. The two health centres are located in areas covering different socio-economic groups – one located in an affluent residential area, and the other a deprived inner-city population. Significant deficiencies were identified in the cancer knowledge of respondents. Personal or family history of cancer, younger age and female sex were associated with improved cancer awareness. The results suggest that overall the public knowledge of cancer is poor and greater attempts should be made to raise awareness. The results were quite similar with the results obtained by our study.

Waller et al[13] in study, 'Awareness of cancer symptoms and anticipated help seeking among ethnic minority groups in England', found that awareness of warning signs was low across all ethnic groups, especially using the open-ended (recall) question format, with lowest awareness in the African group. Women identified more emotional barriers and men more practical barriers to help seeking, with considerable ethnic variation. Anticipated delay in help seeking was higher in individuals who identified fewer warning signs and more barriers.

The importance of self examination to detect cancer at an early stage was effectively enforced in the mind of people. Majority of subjects (41.67%) identified family doctor as source of information for self examination while government hospitals was the least (8.33%) identified source. Attitude towards regular screening for cancer was improved in the study subjects.

Abbas et al[14] studied testicular cancer awareness and testicular self-examination in men attending two South London general practices. Ninety-one per cent were aware of TC but only 26% knew both the age group most affected (25–34 years) and that TC can be curable if detected early. Although 49% of responders had carried out TSE in the past year, only 22% were practising according to recommendations: feeling for lumps at least monthly. Although awareness of TC in this GP population was reasonable, less than half were practising TSE. This study shows much more prevalence of knowledge which can be ascribed to education level and selection of cases from population attending private clinic.

During the period of January 2008 to October 2009, out of the total 25 subjects sent for screening, 3 were diagnosed as having breast, prostate and oesophagus cancer respectively. This indicates that timely screening was beneficial for early diagnosis for cancer.

Thus overall health interventions had significant on awareness of participants' knowledge regarding various cancers, their initial symptoms and preventive measures.

4. Conclusions and Recommendations

Awareness about cancers in community was poor; therefore IEC (Information education, communication) activities need to be taken vigorously and on repetitive manner. Mass media like T.V., Theatres, Radio, News Papers and Internet should be used. Pictorial message was seen to have good impact and these methods should be used more.

Grass root level workers such as community health visitors, Anganwadi workers, volunteers are essential in large numbers to motivate people for bad habit curtailment and to attend clinics for screening and prompt treatment. Therefore they should be trained in identification signs and symptoms of cancer.

The overall task should be provision of primary care with an elaborate and well-documented evidence-based platform for improving cancer awareness and early diagnosis and thereby improving the prognosis for incident cancer patients. These efforts, together with much more focused preventive efforts may be the next important step to improve outcome in cancer treatment in the society.

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