

**EFFECTIVENESS OF COMMUNICATION IN PROMOTING
UTILISATION OF BREAST CANCER SCREENING SERVICES
AMONG WOMEN WORKING IN ANGANWADI CENTRES**



By

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Dissertation submitted to

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In partial fulfillment of the requirements for the degree of

**DOCTOR OF MEDICINE
in
COMMUNITY MEDICINE**

Under the guidance of

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LIST OF ABBREVIATIONS

ANM-Auxiliary Nurse Midwife

AWW-Anganwadi Workers

AWH-Anganwadi Helpers

ASR-Age Standardized Rate

ASHA-Accredited Social Health Activist

BMI-Body Mass Index

BPL-Below Poverty Line

BRCA- Breast Cancer

BSE-Breast Self-Examination

CBE-Clinical Breast Examination

CDPO -Child Development Project Officer

CDR-Crude Death Rate

CHC-Community Health Centre

CI-Confidence Interval

CR-Crude rate

GLOBOCON-Global Cancer Incidence Mortality and Prevalence

ICMR-Indian Council of Medical Research

IEC-Information Education Communication

IEC-Institutional Ethical Committee

KAP-Knowledge Attitude and Practice

MO-Medical Officer

M/I-Mortality - to -Incidence ratio

MRI-Magnetic Resonance Imaging

NCCP-National Cancer Control Programme

OR-Odds Ratio

OCP-Oral Contraceptive Pill

PBCR-Population Based Cancer Registry

PHC-Primary Health Center

PHT-Primary Health care Team

PUC-Pre-University College

RCT-Randomized Control Trial

RHTC-Rural Health Training Center

RR-Relative Risk

RLJHRC- R L Jalappa Hospital and Research Center

SC-Schedule Caste

SD-Standard Deviation

SDUMC- Sri Devraj Urs Medical College

ST-Schedule Tribe

USA-United States of America

USG-Ultrasonography

VHG-Village Health Guide

WHO-World Health Organization

ABSTRACT

Background: Breast cancer is the most common cancer among females, worldwide. Based on the estimated numbers, breast cancer is certainly the most common cancer among women in Asia, accounting for about 21% of all cancer cases in women. According to Global Cancer Incidence, Mortality and Prevalence (GLOBOCAN) cancer statistics 2018, India along with United States of America (USA) and China collectively accounts for almost one third of the global breast cancer burden.

Cancer screening in developing countries is mainly opportunistic type, characterized by low coverage and over screening of women with increased access to health care services. There is no organized screening programme for breast cancer in the country.

Studies assessing the effectiveness of different approaches to ensure better participation of women in breast cancer screening camps from the target community are limited. This study was thus designed to understand the various factors preventing the participation and utilization of breast cancer screening, thereby study the different approaches for encouraging their participation and also the effectiveness of different ways of communication to AWW and AWH in increasing breast cancer screening uptake at cancer screening camps.

Objectives: Among AWW and AWH in Kolar district, Karnataka

1. To assess the effectiveness of reinforcement of communication by the 'in-charge primary health care medical officer' in breast cancer screening uptake as compared to communication by anganwadi supervisor alone.
2. To determine the factors associated with breast cancer screening uptake.
3. To know the barriers in uptake of breast cancer screening.

Materials and methods: It was a mixed method concurrent study design. The study included 376 anganwadi workers working in Kolar and Bangarpete Talukas. The trained anganwadi supervisor followed by the respective PHC medical officer (in the intervention group) invited the AWW and AWH for breast cancer screening and only through anganwadi supervisor (in control group). A pretested semi-structured questionnaire was used to obtain information regarding the socio-demographic details of the study participants using face-to-face interview method after obtaining explained written consent. Those women (AWW and AWH) who did not attend the breast cancer screening camp were listed and contacted through mobile phone to find out the reasons for the same. Direct phone call was made to AWW and AWH to find the reasons for non-participation after obtaining verbal consent.

Results:

The study was conducted among 376 AWW and AWH in Kolar and Bangarpete talukas of Kolar district. All women who participated in the study met the inclusion criteria and were included in the study. There were 186 subjects in the intervention and 190 subjects in the Control group. The mean (SD) age in intervention and control groups was 43.7 (8.5) and 44.2 (8.7) years respectively. The anganwadi women in the intervention group had about 18% higher proportion of them who had at least high school education compared to the control arm and majority of them were married and living with their spouse at the time of the study in both the groups (more than 90%, $p < 0.001$). More number of women belonged to SC category compared to other caste, and this difference was found to be statistically significant ($p = 0.024$).

Out of 376 anganwadi women (AWW and AWH) who were invited for the breast cancer screening service from both the groups, a total of 238 (63.2%) of them attended screening camp. The screening uptake was more in the intervention group (73.4%) compared to the control group (53.6%). This difference across the two groups (20%) was found to be statistically significant. The sub-category '*anxiety*' (31.9%) was reported to be the highest barrier and least was in the sub-category '*no replacement*' (4.3%).. The sub-categories are also supported by verbatim quotes .

Conclusion:

The uptake of screening was more in the intervention group (73.4%) compared to the control group (53.6%). This difference of 20% was found to be statistically significant on univariate analysis ($p < 0.001$). After adjusting for confounders it was found that both the approaches were equally effective and there was no superiority of one approach over the other.

Many barriers were involved in non-participation for breast cancer screening. The reasons were identified by using 'single question' interview guide, and were categorized into '*worry*', '*transport*' and '*work-commitment*'. Barrier in '*worry*' category was found to be highest

Key words: Anganwadi worker, Barriers for screening, Breast cancer screening.

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Introduction



1. INTRODUCTION

Breast cancer is the most common cancer among females, worldwide.^[1] Across the globe, it was estimated that 1.7 million new cases and 521,900 deaths were due to breast cancer in the year 2016 alone. The incidence and disease specific mortality attributed to breast cancer is on the rise globally with about an increase of 0.32 million new cases and 63,900 deaths in less than half a decade (2012 to 2016).^[2]

Based on the estimated numbers, breast cancer is certainly the most common cancer among women in Asia, accounting for about 21% of all cancer cases in women. The overall incidence of breast cancer is lower in Asia, Age Standardised Rate (ASR) of 29 per 100,000 women compared to the average world level, ASR of 43 per 100,000 women, and even more so compared to some developed regions such as the European Union.^[3] Over the past two decades, the incidence and mortality of breast cancer is found to be relatively stable in developed countries, but increasing in developing countries like India.^[4]

India is going through epidemiologic transition with a shift of disease burden from communicable to non-communicable diseases.^[5] According to Global Cancer Incidence, Mortality and Prevalence (**GLOBOCAN**) cancer statistics 2018, India along with United States of America (USA) and China collectively accounts for almost one third of the global breast cancer burden.^[2,5,6] The main reason for this observed increase in India is not actually due to increased early screening of breast cancer but, due to increased diagnosis of disease in advanced stages at various tertiary health care facilities. Earlier, cervical cancer was the most common cancer in Indian woman but now the incidence of breast cancer has surpassed cervical cancer and is also the leading cause of cancer deaths in India.^[2]

Reports from various latest national cancer registries show varied ASR of carcinoma breast across metropolitan cities – 41 per 100,000 women in Delhi, followed by Chennai (37.9), Bangalore (34.4) and Thiruvananthapuram district (33.7).^[2]

Breast cancer attains top rank even in individual cancer registries (Mumbai, Bangalore, Chennai, New Delhi and Dibrugarh) in females during the period of 2012–2014. The relative proportion of breast cancer in different registries varied from 30.7% in Chennai to 19% in Dibrugarh. Increased urbanization and westernization, associated with changing lifestyle and food habits has lead breast cancer to attain top position in all major urban cancer registries.^[2]

Cancer screening in developing countries is mainly opportunistic type, characterised by low coverage and over screening of women with increased access to health care services.^[7] There is no organized screening programme for breast cancer in the country. Hence, a large proportion of women with cancer of the breast present in advanced stages of cancer.^[6]

The integrated cancer control programme calls for early detection of cancer, opportunistic screening and cancer outreach camps that are to be promoted and carried out by health care providers.^[8] Approaches to invite women for breast cancer screening at health centres and/or outreach camps depend on various factors like the literacy level, socio-economic status, religion, caste, marital status, occupation and distance from the outreach camps. Studies assessing the effectiveness of different approaches to ensure better participation of women in breast cancer screening camps from the target community are limited.

Community awareness towards cancer control in rural area is generally being done in the form of health camps. The entire community namely villages or urban slums is

canvassed through distribution of leaflets, display of posters at public places and through loud speakers. Anganwadi workers (AWW) and helpers (AWH) form the back bone of health care delivery in rural India along with the Accredited Social Health Activists (ASHA). These AWW not only cater to the maternal and child health services but also, adolescent health care needs. They usually form the continuum of care from child to adolescence to maternal health among women in rural India.

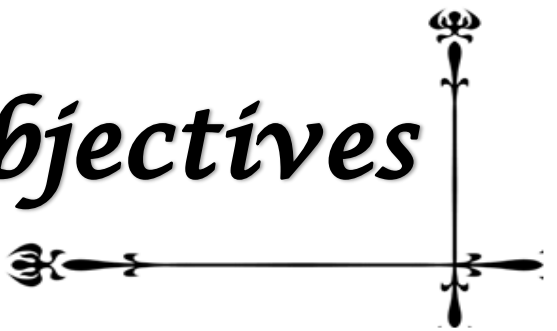
A study done about one and half decade back in Vadodara showed that invitation to cervical cancer screening camps by AWW resulted in a 50% increase in uptake of the screening.^[9] There is no other documented literature regarding utilization of AWW and/or AWH in promoting cancer screening in India. The AWW and AWH who are the link to health care system for rural women must be brought into the domain of breast cancer screening, firstly, by themselves getting screened and then use them as mediators for further encouraging rural women in uptake of breast cancer screening. Testing various approaches and devising the approaches that improve the breast cancer screening uptake among AWW and AWH may help in further choosing a particular approach to upscale in the community they represent.

The Department of Community Medicine at Sri Devaraj Urs Medical College (SDUMC), Kolar conducted a breast cancer screening camp for AWW of Bangarpete taluk, Kolar. It was noted that the attendance of AWW to the screening camp was very less (only about one third of them attended); and of those who attended less than half of them volunteered for breast cancer screening by Clinical breast examination(CBE).

This study was thus designed to understand the various factors preventing the participation and utilisation of breast cancer screening, thereby study the different

approaches for encouraging their participation and also the effectiveness of different ways of communication to AWW and AWH in increasing breast cancer screening uptake at cancer screening camps.

Objectives

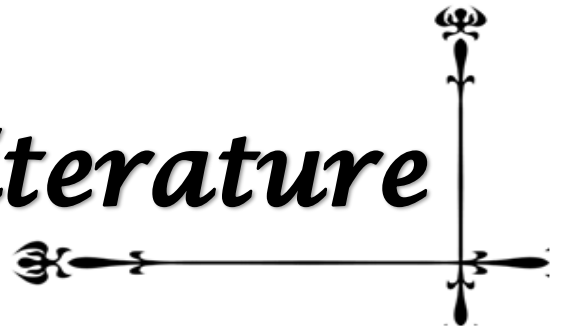
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2. OBJECTIVES

Among AWW and AWH in Kolar district, Karnataka

1. To assess the effectiveness of reinforcement of communication by the ‘in-charge primary health care medical officer’ in breast cancer screening uptake as compared to communication by anganwadi supervisor alone.
2. To determine the factors associated with breast cancer screening uptake.
3. To know the barriers in uptake of breast cancer screening.

Review of Literature



4. REVIEW OF LITERATURE

Breast is a specialized organ located in the anterior chest wall and more developed among females. Female hormones such as oestrogen and progesterone are important in promoting growth and changes that occur in the breast especially, during menstrual cycle and pregnancy. The primary function of the breast is to produce milk for the nutrition of the infant and baby.^[10]

Breast cancer is a disease that occurs when cells in breast tissue change (or mutate) and keep on multiplying. These abnormal cells usually cluster together to form a tumor.^[11]

3.1 Epidemiology of breast Cancer

3.1.1 Global Burden of breast cancer

Globally, breast cancer is the most commonly occurring cancer among women and accounts for the highest cause for cancer related mortality among them.^[12] It is estimated that breast cancer accounts for 1.7 million incident cases and 5,21,900 deaths in 2016. This accounts to 25% of all new cancer cases and 15% of all cancer deaths among females. It is predicted that it will reach up to 22 million incident cases in next two decades.^[2]

Incidence rates are similar across developed countries such as America, Australia and New Zealand with; relatively a higher incidence compared to developing countries of Asia and Africa. However, over the past two decades, incidence and mortality of breast cancer is relatively stable and shows a decreasing trend in developed countries with a contrasting increasing trend in developing countries (**figure 1 and 2**).^[3]

Figure 1: World map showing most common type of cancer mortality across different countries in the year 2018 among females^[3]

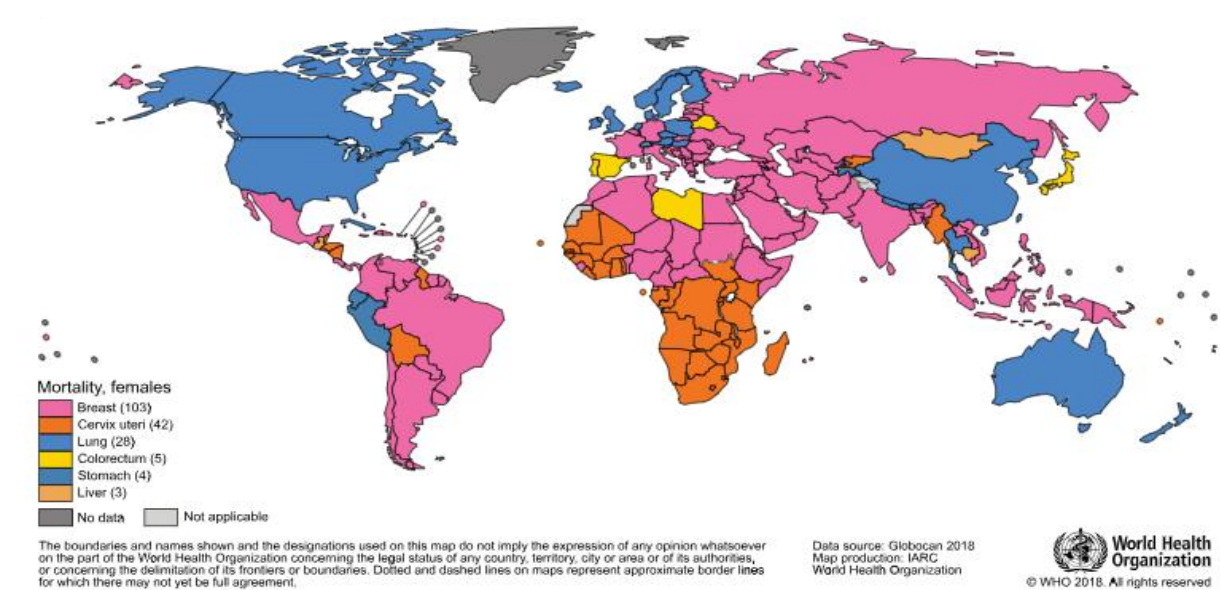
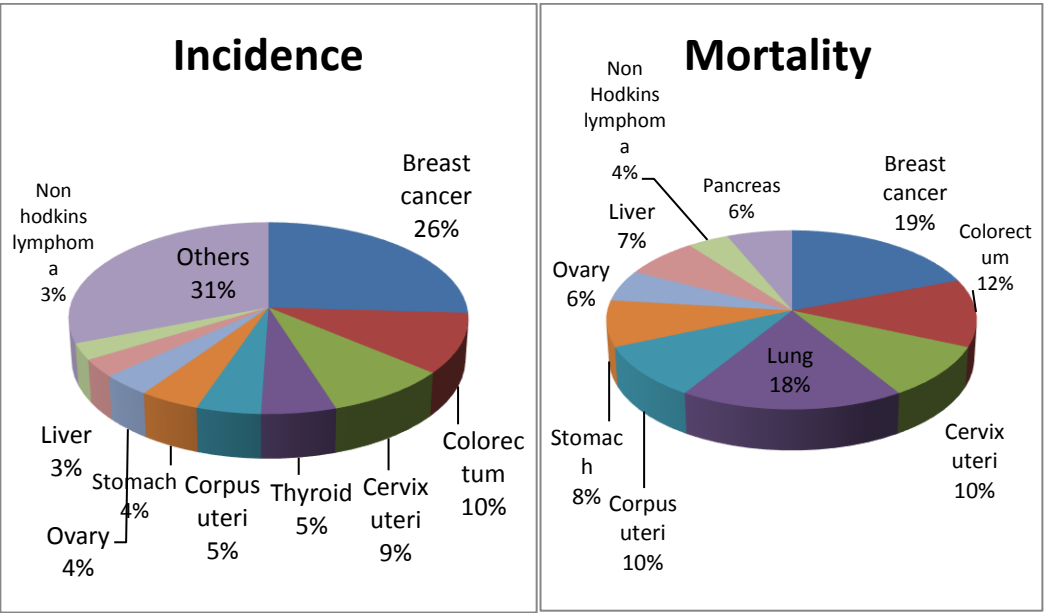


Figure 2: Distribution of incident cases and deaths of the 10 top most common cancers globally in the year 2018 for females^[3]



According to GLOBOCAN Cancer Statistics 2018, the worldwide incidence and mortality rate across 185 Countries showed that breast cancer is the most commonly diagnosed cancer and the leading cause of cancer death at the National level among females. Breast and cervical cancer are the leading causes of cancer death among women in 103 and 42 countries respectively followed by lung cancer in 28 countries.^[13]

3.1.2 Burden of breast cancer in developing countries of south-east Asia

Asia is a region with diverse race, culture, ethnicity, large socioeconomic disparities and varying health care systems. The Asia-Pacific region includes eastern and south-eastern Asia as well as Oceania.^[14] Variation in breast cancer incidence and mortality exists between and within countries of this region. Incidence of breast cancer is lower than in developed countries, but the proportional contribution of Asia to the global breast cancer rates is rapidly increasing. Moreover, the ASR of breast cancer in Asia is still only about one thirds of that in the USA (29.1 per 100,000 women in Asia versus 92.9 in the USA), while the mortality-to-incidence ratio (M/I) are much higher for Asia than USA (0.35 versus 0.16 respectively).^[13]

Figure 3: Incidence and mortality-to-incidence ratio (M/I) of breast cancer in the Asian region^[2]

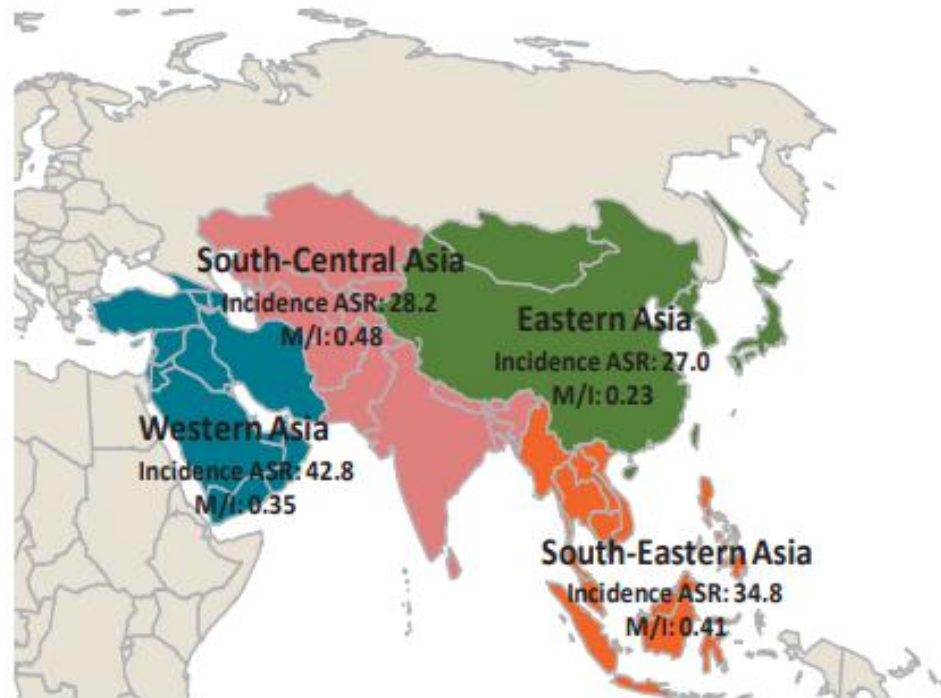


Figure 3 shows the ASR and M/I among the south-east Asian region. It is found that the highest ASR is in western Asia (Afghanistan, Armenia, Iran Iraq, Israel, Turkey, etc.) and lowest in the eastern part of Asia. The south central Asia which constitutes India shows ASR of 28.2 with highest M/I in the Asian region (0.48).

A review of various studies and national level reports in Asia to determine ASR showed that, Japan (51.5 per 100,000 women) and South Korea (52.1) had highest incidence of breast cancer in eastern Asia, whereas, in south-eastern Asia the highest rate was noted in Singapore (65.7). Similar to ASR, mortality rate due to breast cancer varied across different countries in Asia, ranging from 6.2 per 100,000 women in eastern Asia to 15.1 in western Asia.^[13]

A study done by **Merel K et al** in Southeast Asian nations found that, breast cancer accounts for 22% of the new female cancer cases and 15% of the total cancer deaths. This study also showed ASR to be highest in Singapore (59.9) and lowest in Vietnam (15.6). Mortality rates were recorded highest in Indonesia (36.2), low in Singapore (13.6), while Vietnam remains at the bottom for breast cancer mortality.^[15]

3.1.3 Breast cancer burden in India

In India the incidence of breast cancer is significantly lower compared to the western countries. Breast cancer is now the most common cancer in Indian women having recently overtaken cervical cancer.^[2,16,17] Breast cancer in India varies from as low as 5 per 100,000 women per year in rural areas to 30 per 100,000 women per year in urban areas. The overall annual ASR for breast cancer in India is 25.8 per 100,000 women; with 12.7 per 100,000 women dying due to breast cancer.^[18]

The ‘Call for action: Expanding care in India’ report in 2015 has shown that breast, cervical and ovarian cancers put together contributes to 40% of all the cancer incidences among women in India. Half of the incidence caused by these top three cancers was contributed by breast cancer alone (19%). It also showed that states such as Kerala, Tamil Nadu and Delhi were having the highest incidence of these cancers.^[19]

Malvia et al found breast cancer to be highest ranked among women in individual registries of metropolitan cities during the period of 2012–2014. Whereas in rural registry (Barshi) cervical cancer still occupied the topmost position among women and cancer of breast was placed second. Breast cancer crude rate (CR) among different registries showed highest rate in Thiruvananthapuram 43.9 (per 100,000 women) followed by Chennai (40.6), New Delhi (34.8) and Mumbai (33.6). Among all the Population Based Cancer Registry (PBCR) the top four places were occupied by Delhi (with ASR of 41.0 per 100,000 women), Chennai (37.9), Bangalore (34.4) and Thiruvananthapuram (33.7) districts respectively.^[2]

3.1.4 Breast cancer burden in Karnataka

The PBCR in Bangalore during the years 2012–14 showed that every year 45,000 new cancer cases were reported in Karnataka with about 8,000 of them being breast cancer cases. The registry also showed that Bangalore tops in breast cancer with 27.5% cases of the state. The respective CR and ASR per 100,000 population in Bangalore were 29.3 and 34.4 respectively.^[20]

A study conducted among cancer patients seeking care from rural tertiary care centre (SDUMC), Kolar showed that the highest number of cases among women was found to be oral cancer (30.3%) followed by cervical (17.5%) and breast cancer (10.3%).^[21]

3.2 Risk factors for breast cancer

Studies have shown that risk for breast cancer is due to a combination of factors i.e., multifactorial causation; as with any other cancer. The main factors that influence risk include being a woman and getting older. Most breast cancers are found in women who are aged 50 years and above.^[22]

The various risk factors for breast cancer among women are as follows:^[22]

3.2.1. Age: The incidence of breast cancer increases with age, doubling the risk every 10 years until menopause.

3.2.2. Gender: Being a woman is the main risk factor for developing breast cancer. Men can develop breast cancer, but breast cancer disease is about 100 times more common among women compare to that in men. This is probably because men have less of oestrogen and progesterone hormones which play role in breast cancer cell growth.

3.2.3. Age at menarche and menopause: Early age of menarche and late menopause have an increased risk of developing breast cancer. Women who have a natural menopause after the age of 55 are twice as likely to develop breast cancer as women who experience the menopause before the age of 45. This is again due to the increased duration of exposure to oestrogen and progesterone hormones during their reproductive life.

3.2.4. Age at first pregnancy: Nulliparity and delayed age at their first child birth; both increase the lifetime incidence of breast cancer. The risk of breast cancer in women who have their first child after the age of 30 is about twice that of women who have their first child before the age of 20. The highest risk group is those who

have a first child after the age of 35. These women appear to be at even higher risk than nulliparous women. An early age at birth of a second child further reduces the risk of breast cancer.

3.2.5. Family history: Up to 10% of breast cancer in western countries is detected to be due to genetic predisposition. Breast cancer susceptibility is generally inherited as an autosomal dominant with limited penetrance. Two breast cancer genes BRCA1 and BRCA2, which are located on the long arms of chromosomes 17 and 13 respectively, have been identified as risk factors.

3.2.6. Lifestyle factors:

3.2.6.1. Diet: Although there is a close correlation between the incidence of breast cancer and dietary fat intake, the true relation between fat intake and breast cancer does not appear to be particularly strong or consistent.

3.2.6.2. Weight: Obesity is associated with a two-fold increase in the risk of breast cancer in postmenopausal women whereas; among premenopausal women it is associated with a reduced incidence.

3.2.6.3. Oral contraceptive pills (OCP): Women who are taking oral contraceptives and for at least 10 years show a small increase in the relative risk (RR) of developing breast cancer. Women who begin to use before the age of 20 appear to have a higher RR than women who begin oral contraceptive use relatively at an older age.

3.2.6.4. Physical activity level: Women who are having sedentary lifestyle may have an increased risk of breast cancer.

A study carried out by **Balasubramaniam et al** showed that nulliparous women had higher risk of developing breast cancer (2.2 fold increased risk) than parous women.^[23] Similar results were shown by **Ewertz et al** who also showed that nulliparity was associated with a 30% increase in risk compared with parous women, and for every 2 births the risk was reduced by about 16%. Women giving birth to first child after the age of 35 years had a 40% increased risk compared to those with a first child birth before the age of 20 years.^[24]

Cross sectional studies done in India showed that the incidence of breast cancer increased with advancing age; with age more than 40 years forming about 40% of cases compared to a meagre number in under 30 years age category.^[25,26]

Studies done in India to identify the risk factors associated with breast cancer showed that age at menarche, age at first child birth and having an abortion had a significant risk for developing breast cancer.^[26-28]

A systematic review and meta-analysis on modifiable and non-modifiable risk factors among women by **Nindrea et al** on usage of OCP showed that women who used OCP were at 1.27 times higher odds of having breast cancer compared to those who did not use.^[29] A similar result was obtained from another case control study by **Pike et al** in California that showed OCP use before first full-term pregnancy was associated with an elevated risk of breast cancer with 2.2 times higher risk after six years of OCP use, and also risk of breast cancer increased with duration of OCP use i.e. it showed a dose response relationship.^[30]

3.3 Knowledge, Attitude and Practice (KAP) regarding breast cancer among women in India

Cross sectional studies assessing KAP among Indian women showed that at any given point of time only about half of the population had awareness regarding breast cancer. Among those who were aware, only about one third of them could actually enlist at least one of the risk factors for breast cancer.^[8,31,32]

3.4 Screening for breast cancer

Screening is defined as “the search for unrecognized disease or defect by means of rapidly applied tests, examination, or other procedure among apparently healthy individuals”.^[33]

The goal of screening is to detect the disease at an early stage at which it can be treated and cured.

The primary aim of breast cancer screening is to reduce the rate of breast cancer mortality. Several randomized controlled trials (RCT) showed that screening with mammography alone could help reduce breast cancer mortality rates substantially.^[34] An independent review on the combined evidence from the RCTs showed that screening delivered about a 20% reduction in breast cancer mortality rate.^[35] Another review found that screening reduced the mortality rate associated with breast cancer by an average of 25%.^[36] Reduction in mortality varied across different age groups; varying from 12% in women aged 39 to 49 years, 14% in women aged 50 to 59 years, 33% in women aged 60 to 69 years, and 20% in women aged 70 to 74 years.^[37]

3.4.1 Various modalities available for breast cancer screening

3.4.1.1. Mammography:^[38] Mammography is a special type of low-dose x-ray imaging used to create detailed images of the breast. Mammography is currently the best available population-based method to detect breast cancer at an early stage, when treatment is most effective. Mammography can demonstrate micro calcifications smaller than 100 micrometre. The sensitivity of mammography ranges from 72% to 80% with specificity of around 68%. Mammography is shown to reduce the risk of dying from breast cancer by about 20 to 35% among women in the age group of 50–60 years.

Advantages:

- a. Mortality reduction
- b. Improved treatment by early detection of disease

Disadvantages:

- a. The major drawback of mammography is its high cost
- b. Low-dose ionizing radiation – which may be harmful to the patient
- c. False-positive results may arise when benign micro calcifications are shown as malignant

3.4.1.2. Clinical breast examination (CBE):^[38–40] The most appropriate approach for early detection of breast cancer in India could easily be CBE due its nature of being an inexpensive and non-invasive procedure. CBE may be an effective modality for early detection of breast cancer with its sensitivity and specificity being 99.4% and 68.7% respectively.

Advantages:

- a. Early detection of disease
- b. Allays anxiety
- c. Facilitates discussion of personal details
- d. High sensitivity and specificity

Disadvantages:

- a. May be uncomfortable to some
- b. False positive and false negative
- c. Over diagnosis

3.4.1.3. Breast self-examination (BSE):^[29] BSE is an inexpensive and non-invasive procedure which includes the regular examination of breasts by women herself (i.e., monthly at least once BSE). Even with appropriate training, BSE has not been found to reduce breast cancer mortality. The estimated sensitivity of BSE is very low (20% to 30%) and is still lower among older women. The standardisation of teaching and performing BSE is not yet clear.

3.4.1.4 Breast ultrasonography (USG):^[38] Breast USG uses sound waves to create images of the breast tissue. Breast USG is often used to assess abnormalities that are found during mammography or a CBE.

3.4.1.5. Breast Magnetic Resonance Imaging (MRI):^[38] Breast MRI when used to screen for breast cancer involves the use of radio waves and a powerful magnet linked to a computer that creates detailed pictures of breast tissue. However, it is not typically recommended for women at average risk of breast cancer due to very high costs associated with it.

Considering the advantages and disadvantages of the various screening tools for detecting breast cancer, CBE has the highest sensitivity and specificity and could be ideally used at the community level.

Table 1: Breast Cancer Screening Guidelines for Women.^[41]

Sl. No	Age group	American Cancer Society
1	Women aged 40 to 49 with average risk	Women aged 40 to 44 years should have the choice to start annual breast cancer screening with mammograms if they wish to do so. The risks of screening as well as the potential benefits should be considered. Women aged 45 to 49 years should get mammograms every year.
2	Women aged 50 to 74 with average risk	Women aged 50 to 54 years should get mammograms every year. Women aged 55 years and older should switch to mammograms every 2 years, or have the choice to continue yearly screening.

3	Women aged 75 or older with average risk	Screening should continue as long as a woman is in good health and is expected to live 10 more years or longer.
4	Women with dense breasts	There is not enough evidence to make a recommendation for or against yearly MRI screening.
5	Women at higher than average risk	Women who are at high risk for breast cancer based on certain factors (such as having a parent, sibling, or child with a BRCA 1 or BRCA2 gene mutation) should get an MRI and a mammogram every year.
6	Additional issues relevant for all women	Women should be familiar with the known benefits, limitations, and potential harms associated with breast cancer screening. They should also be familiar with how their breasts normally look and feel and report any changes to a health care provider right away.

3.5 Invitation for breast cancer screening

Many government agencies and scientific societies recommend a screening programme for cervical, breast and colorectal cancer because of the high burden of disease and availability of adequate screening tools that help in reducing the mortality of these cancers. Organized screening camps have been held and different approaches have been used to invite them for screening. Studies have shown that organized

programmes are effective in reducing the mortality and decrease the unnecessary use of screening tools.^[13] But in countries like India such type of organized screening programmes are not happening in sufficient numbers. Cancers are being detected more often than not only through ‘opportunistic screening’ and mostly at tertiary care institutes.

Organized screening programmes use one of the following modes in inviting the target groups:

1. Telephone intervention- Land line, mobile phone
2. Mass media- Television, radio, handouts, pamphlets, banners
3. Letters-. Email, postal letters
4. Face to Face- House to house visit
5. Invitation by health care personnel- Doctors, nursing staff, Auxiliary nurse maid (ANM), ASHA, AWW, AWH, Village health guide(VHG)

High participation in screening is the primary goal of all organized programmes and attention has been paid recently to the different approaches for invitation. Several interventions have been proposed to increase participation and many quantitative experimental studies have been conducted to evaluate their effectiveness around various parts of the world.^[42,43]

1. Postal reminders

Allgood et al in his randomized trial showed that 68.2% of those receiving postal reminders attended breast cancer screening in 30 days of the first offered appointment in intervention arm with RR of 1.19 as compared to those without postal reminders (64.2%).^[44]

Similar results were obtained by **Stephen H et al** in a study done on adult group health cooperative members by sending the postal reminders to increase the uptake of mammography for breast cancer screening. The odds of getting a mammogram done, increased to at least 60% in the groups receiving a reminder postcard and found to be statistically significant.^[45]

2. Telephone recall

A study conducted by **Goelen et al**, showed that the 22% of those receiving telephone reminder call attended screening mammography as compared to those without telephone reminders (but statistically not significant).^[46]

An improvement in participation (by 9% to 14%) was noticed in the three other studies which use a combination of approaches involving letter and telephonic method of communication to the rate of participation (intervention arm) when no such communication was used (control arm).^[46-48] Higher participation rate in breast cancer screening was also reported by **Ann Richardson et al** in a RCT among the subjects, 56 % were screened without a reminder compared with 43 % of the group that did not receive letters.^[49]

3. Face to face contact:

Seguru et al conducted a cluster randomized trial in Spain to invite women for mammography screening using three different approaches – (i) letters sent through mail from the program (program group) (ii) letters sent by mail from the primary health care team (PHT group) and (iii) direct contact through a trained professional (direct contact group). Highest response rate was found in direct contact group, followed by PHT team and by the program group (63.5%, 55.6% and 52.1% respectively).^[50] Similar study by **Saywell et al** compared five different types of intervention (in person, telephone + letter, in person +letter, physician letter, telephone alone) to increase the participation in mammography screening methods and found that in-person, and in-person plus letter had significantly better compliance rates compared with the control.^[51]

4. General Practitioner (GP) signature on the invitation letter

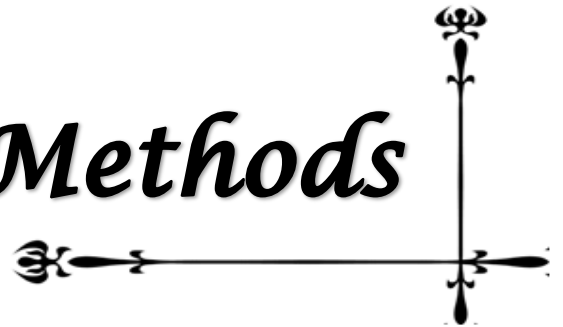
Two randomized trials assessed the effectiveness of a different approach to invite women for breast cancer screening programme by using a letter signed by the GP. It was an open-ended invitational letter signed by the GP with a prefixed appointment compared to invitation by programme co-ordinator. It was found that invitation letters signed by the GP with pre-allocated appointments induced a significant increase in compliance with screening.^[52,53] But, another trial showed that the use of a letter from the woman's personal physician did not increase participation for screening of breast.^[43]

Most of the trials were done in western countries. The results cannot be extrapolated to middle income countries like India due to the difference in the socio-cultural characteristics. Also, interventions using GP showed mixed results and this inconclusiveness shown thus, warrants for further research. In countries like India, various methods of inviting for cancer screening are adopted, such as distribution of pamphlets, miking in village regarding the screening and inviting people with the help of ASHA workers by house to house visit.

Due to the nature of primary health care system in India, interventions involving the medical officer in-charge of the PHC may have more impact. Based on this background, the interventions in the current study was planned to involve the medical officer in-charge of PHC to improve the screening uptake for the breast cancer screening camps conducted at the PHC among anganwadi workers and helpers.

The concept of anganwadi workers was devised in the year 1970 in India. There is one anganwadi worker and one helper for every 400-800 population. The beneficiaries are especially nursing mother, pregnant women, other women in reproductive age group (15-45 years), children below the age of 6 years and adolescent girls. Their role is to provide food supplements to pregnant and under five children, immunization activities, growth monitoring of the children etc.^[9] Reaching out to the community through anganwadi workers is simple, cost effective and easily implementable. Increasing the screening uptake among AWW and AWH ensuring their awareness about the need for screening will help in further utilization of these AWW and AWH services in improving screening uptake in general community.

Materials & Methods



4. MATERIALS AND METHODS

4.1 TOPOGRAPHY OF KOLAR DISTRICT

Kolar district in the state of Karnataka is a semi-arid and a drought prone area and less than 14% of the land is under forest cover. The population of Kolar is about 15.4 lakh with a literacy rate of 84%. More than 90% of the drinking water requirements are met by the ground water resources. The district is endemic to fluorosis with around 16% of the villages affected by excess fluoride concentration in groundwater. Agriculture is the major occupation followed by sericulture, floriculture and horticulture farming. Quarrying, stone crushing, bricks and roof tiles manufacturing forms the major unorganized occupational sectors in Kolar.^[54]

The health care services in the district of Kolar are provided by both public and private healthcare sector. The public healthcare facilities include 61 Primary Health Centres (PHC's), two Community Health Centres (CHC), five Taluk hospitals, four Urban Health centres, and one District Hospital.^[55] There is a private medical college Sri Devaraj Urs Medical College (SDUMC) along with its constituent hospital namely the R.L. Jalappa Hospital and Research centre (RLJH&RC). Private healthcare sector is formed by various nursing homes, private health clinics and also private practitioners from other indigenous systems of medicine.

Figure 4: Map of Karnataka showing Kolar district



Figure 5: Map of Kolar district showing Kolar and Bangarpete taluks



4.2 Study design:

Mixed method, concurrent study design was used.

Quantitative study design: Facility based cluster randomized controlled trial with two groups; intervention group and control group.

Qualitative study design: Telephonic interview.

4.3 Study setting:

The study was conducted in two of the six taluks of Kolar district i.e. Kolar and Bangarpete.

4.4 Study population:

All ananganwadi workers (AWW) and ananganwadi helpers (AWH) working in ananganwadi centres in Kolar district, aged 30 years and above were included in the study.

4.5 Study duration:

The study was conducted from September 2016 to August 2018.

4.6 Sample size calculation:

Quantitative:

$$\text{Calculation: } n = \frac{[p_1(1-p_1) + p_2(1-p_2)] * [z_{\alpha} + z_{1-\beta}]^2}{(p_1 - p_2)^2}$$

- p_1 = Proportion of control group
- p_2 = Proportion of experimental group
- z_{α} = Standard number deviate at $\alpha = 5\%$
- $z_{1-\beta}$ = Power at standard number deviate, 80% (0.84)

Sample size was calculated based on the compliance rate of women to participate in the breast cancer screening camp. To detect a 20% difference in compliance between the two different approaches, with 80% power at 95% confidence level and a design effect of 2 (to adjust for clustering effect) the minimum sample size was calculated to be 182 women per group. Thus a total of 364 anganwadi workers and helpers were required for the study (calculated using **Open Epi version 3.01**)

Qualitative: All the subjects who did not attend the screening were included to elicit the reasons for non-attendance.

4.7 Inclusion criteria

All anganwadi workers and helper's employed in the anganwadi in the age group of 30 years and above.

4.8 Exclusion criteria

- a. Self-reported breast cancer cases
- b. History of breast cancer in family

4.9 Sampling procedure

Out of six taluks in Kolar district, two taluks were selected randomly using a lottery method. The two taluks were again allocated into intervention and control groups using lottery method (the first one picked was considered to be the intervention group). There were 18 PHCs in Kolar and 13 PHC in Bangarpete. Among these selected taluks, four PHCs were selected in each of the taluk (a total of eight PHCs) by using random number table. All the randomization activity was performed by an expert in the Department of Community Medicine, SDUMC who was not related to the study.

All anganwadi centres under these selected PHC's formed the sampling frame for the current study (anganwadi women and helpers). This was a single blinded study, such that the participants were not informed of the groups based on the intervention of communication.

4.10 Study tool:

1. Pretested semi-structured questionnaire to capture the socio-demographic details. (**Annexure I**)
2. 'Single question' interview guide for knowing the reasons for non-participation. (**Annexure II**)

4.11 Pre-testing of questionnaire:

Questionnaire was prepared in English language and translated to Kannada language with back translation. The questionnaires were checked for both content and face validity by two separate researchers who were not part of the study and fluent in both the languages; discrepancies if any were sorted with the discussion between them. The questionnaire was tested among five (three AWW and two AWH) participants belonging to a different taluk which were not a part of the study. There were no suggestions for modification by the participants and there was good validity and reliability for the semi-structured questionnaire.

Similar procedure was adopted to prepare the ‘single question’ interview guide for knowing the reasons for non-participation. This was although not pre-tested on any subject.

4.12 Approval for study:

The study was approved by the Institutional Ethical review Committee (IEC) (**Annexure III**)

Permission was also obtained for the start of the study from the Deputy Director of Ministry of Women and Child Development, Kolar and also Child development project officer (CDPOs) of the study Taluks (Kolar and Bangarpete) (**Annexure IV**).

4.13 Study variables:

1. Independent/Study variables – for baseline comparisons
 - a. Age
 - b. Education
 - c. Occupation
 - d. Marital status
 - e. Socio-economic status (Modified B G Prasad classification, January 2018)

[Annexure V]

2. Outcome variable: Screening Uptake (yes/no)

4.14 Study procedure:

The study was started after obtaining the necessary approvals from the IEC and the concerned authorities. Prior information was given regarding the study objectives to the anganwadi supervisors belonging to the selected eight PHCs and the PHC medical officers in the intervention group.

4.15 Training for anganwadi supervisor and PHC medical officer:

One day training was given to all anganwadi supervisors (intervention and control group) and PHCs medical officers (intervention group only) regarding breast cancer risk-factors, signs and symptoms, benefits of screening for breast cancer especially in AWW and AWH. The training session was done separately for supervisors in two taluks on separate occasions. The session lasted for about 20 to 30 minutes. The session was conducted with use of handouts, power point presentations and discussion at the end to clear doubts, if any. The content to be spoken during the

gathering of AWW and AWH meeting sessions was briefed for the four medical officers separately at their PHC belonging to the intervention group. The discussion lasted for about 15 to 20 minutes.

4.16 Delivery of intervention at monthly meeting of AWW and AWH:

On the subsequent anganwadi workers monthly meeting, the trained anganwadi supervisor followed by the respective PHC medical officer (in the intervention group) invited the AWW and AWH for breast cancer screening and only through anganwadi supervisor (in control group). Along with the regular proceedings in the monthly meeting, about 10 minutes time was allotted to speak about breast cancer. Both anganwadi supervisor and PHC medical officer spoke for about 10 minutes about breast cancer in the intervention group and only by the anganwadi supervisor in the control group by showing the handouts regarding the breast cancer risk factors, signs and symptoms, purpose of conducting screening and benefits of screening (**Annexure VI**). Both the groups were informed about the date, time and place of conduct of breast cancer screening during the meeting. There was no reminder again in any manner in both the groups.

The dates for conduct for screening was different for different PHCs and also different for AWW and AWH belonging to the same PHC so as to make any one of them available at the anganwadi at any given point of time and thus not hampering the day to day activities of the anganwadi. List of all AWW who attended the meeting were noted. Those who did not attend were informed about the need for breast cancer screening and the day, time and place to attend for breast cancer screening through the help of other AWW (**Table 1**).

4.17 Screening at PHC:

On the day of screening, a pretested semi-structured questionnaire was used to obtain information regarding the socio-demographic details of the study participants using face-to-face interview method after obtaining explained written consent. All the participants were first screened for eligibility criteria aged 30 years and above (age less than 30 years have <4 % chances of getting the disease). and later screened for breast cancer using clinical breast examination by the investigator who was trained in Department of Surgery, SDUMC for a period of two weeks. The protocol included referral of subjects to RLJH&RC if found positive in the clinical breast examination.

4.18 Telephonic interviews among those who did not attend screening:

Those women (AWW and AWH) who did not attend the breast cancer screening camp were listed and contacted through mobile phone to find out the reasons for the same. Direct phone call was made to AWW and AWH to find the reasons for non-participation after obtaining verbal consent. AWH who did not have access to mobile phone were contacted through AWWs during their work hours (11am and 1 pm) and requested to get the AWH on the line and the reasons were noted. If they were not responding to the call, a phone call was made again on the subsequent working day. Those who did not answer to the second call were labelled as “non-responders”. The reasons were captured by using the ‘single question’ interview guide designed for knowing the reasons for non-participation. All reasons were noted down in a note book during the phone conversation. Also the socio-demographic details were captured using the same pre-tested question which was designed to capture the details during their visit for breast cancer screening. The telephonic conversation lasted for not more than five minutes.

Figure 6: Flowchart depicting the participant's recruitment and study procedure

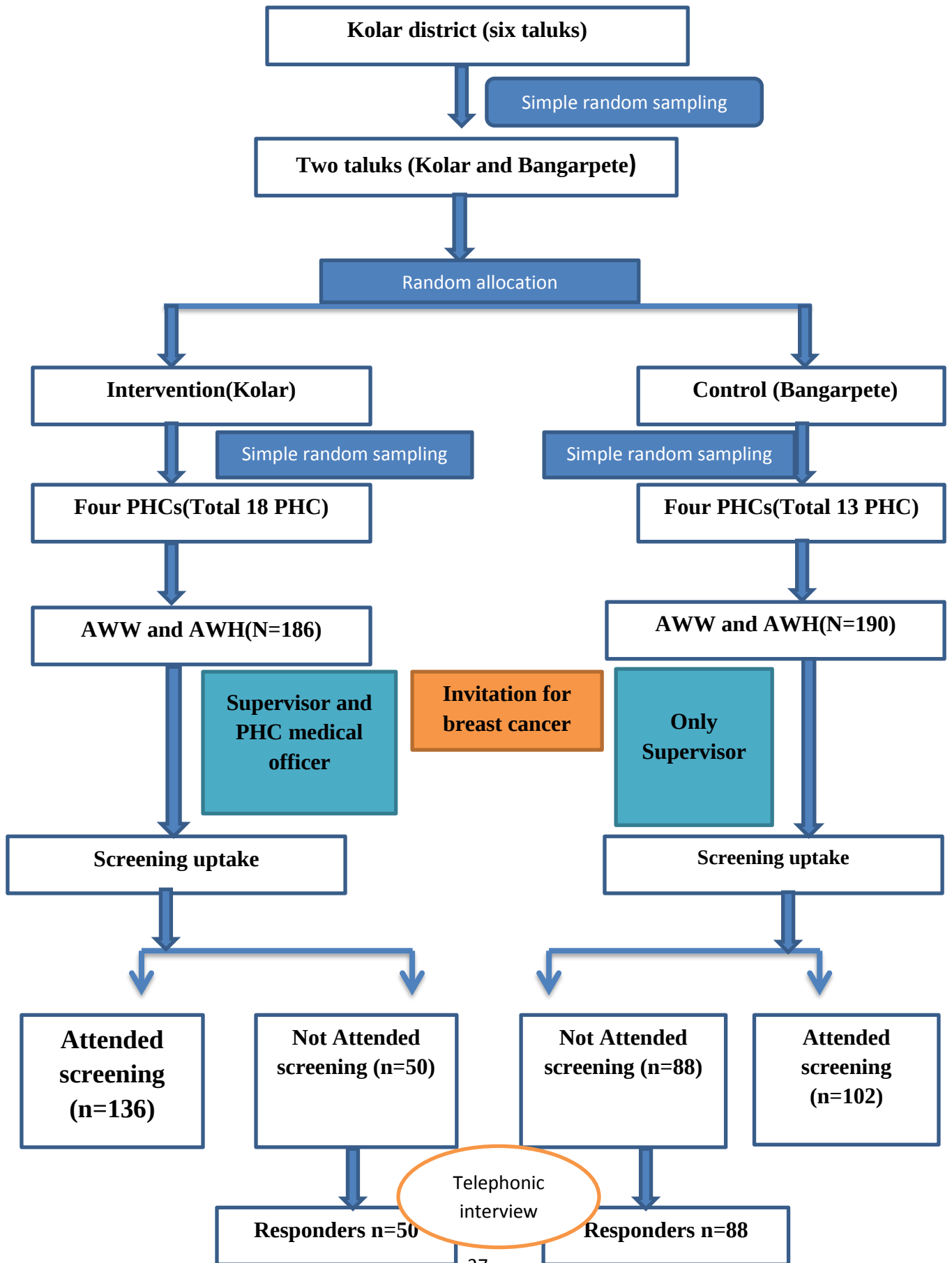


Table 2: Schedule for Breast cancer screening for AWW and AWH at respective PHCs

Sl No	Taluk	PHC	Date
1	Kolar	Chamarahalli	20/9/2017
			21/9/2017
2		Vemgal	23/9/2017
			25/9/2017
3		Sugutur	26/9/2017
			27/9/2017
4		Annenahalli	28/9/2017
			29/9/2017
1	Bangarpete	Bangarpete	30/10/2017
			31/10/2017
2		Chikandanahalli	2/11/2017
			3/11/2017
3		Doddachinnahalli	4/11/2017
			7/11/2017
4		Hanchenahalli	8/11/2017
			9/11/2017

*PHC-Primary health canter

4.19 Statistical methods:

Quantitative analysis:

Data captured in the proforma were double entered and validated using EpiData version 3.1 (EpiData Association, Odense, Denmark). Data was analyzed using Stata 12.0 software (StataCorp LP, College Station, TX). Continuous data like age was expressed using mean standard deviation (SD). Categorical variables like age, gender, occupation, marital status, education status, socio-economic status, and distance to PHC categories were expressed using proportion (%). The differences in baseline characteristics across the two groups were tested using chi-square test. Unadjusted relative risk with 95% confidence interval was calculated to assess for factors associated with screening uptake. To assess the independent effect of intervention on screening uptake, a multivariable model (log binomial regression) was used to adjust for confounding variables (all socio-demographic variables) and adjusted relative risk with 95% CI was calculated. A 'p' value of <0.05 was considered statistically significant.

Qualitative analysis:

Interview was transcribed into English language directly during the telephonic interview and quotes were noted down. This was later transcribed to the Microsoft word document for further analysis by the different investigators. Manual content analysis was done to derive categories and sub-categories to determine the barriers to screening uptake. The sub-categories were reported as frequency and percentage. Results were also reported using verbatim quotes. These quotes were derived independently by two different investigators (Dr. Swathi HJ and Dr. Mahendra M) and agreement was reached. Disagreements were further resolved in consultation with the third investigator (Dr. Prasanna Kamath B T). All investigators are trained in qualitative research.

Results

A decorative flourish consisting of a vertical line with a small crown-like ornament at the top and a horizontal line intersecting it, with ornate scrollwork at the ends.

5. RESULTS

The study was conducted among 376 AWW and AWH in Kolar and Bangarpete taluks of Kolar district. All women who participated in the study met the inclusion criteria and were included in the study.

Comparison of socio demographic characteristics across two groups:

There were 186 subjects in the intervention and 190 subjects in the Control group. The mean (SD) age in intervention and control groups was 43.7 (8.5) and 44.2 (8.7) years respectively.

Table 3: Distribution of anganwadi women across two groups by age (N=376)

Age (in years)	Intervention (n=186) n (%)	Control (n=190) n (%)
30 – 40	75 (40.3)	72 (37.9)
41 – 50	70 (37.6)	40 (21.1)
51 – 60	41 (22.1)	78 (41.0)

$$\chi^2=19.707, df=2, p<0.001$$

Table 3 shows that the distribution by age groups across two groups were significantly different ($p<0.001$). The major difference was noted in the age group between 51 and 60 years. The anganwadi women were about twice more in this age category in the control group compared to the intervention arm.

Table 4: Distribution of anganwadi women across two groups by their educational status (N=376)

Education	Intervention(n=186) n (%)	Control(n=190) n (%)
Illiterate	16 (08.6)	14 (07.3)
Primary school	40 (21.6)	50 (26.3)
Middle school	24 (12.9)	54 (28.4)
High school	73 (39.2)	47 (24.7)
PUC and above	33 (17.7)	25 (13.3)

PUC → Pre University College

$\chi^2=19.470$, df=4, **p<0.001**

Table 4 shows that the distribution of two groups by educational status were significantly different ($p<0.001$). The anganwadi women in the intervention group had about 18% higher proportion of them who had at least high school education compared to the control arm.

Table 5: Distribution of anganwadi women across two groups by their occupational status (N=376)

Occupation	Intervention (n=186) n (%)	Control(n=190) n (%)
Anganwadi worker	106 (56.9)	98 (51.5)
Anganwadi helpers	80 (43.1)	92 (48.5)

$\chi^2=1.10$, $df=1$, $p=0.292$

Table 5 shows that the distribution by occupational status across two groups were almost similar. The two different occupations i.e. AWW and AWH were almost equally distributed.

Table 6: Distribution of anganwadi women across two groups by their marital status (N=376)

Marital status	Intervention (n=186) n (%)	Control (n=190) n (%)
Married	169 (90.8)	179 (94.2)
Others*	17 (9.2)	11 (5.8)

*widow, separated, divorce

$\chi^2=1.53$, df=1, p=0.216

Table 6 shows that the distribution by marital status across two groups were almost similar. Majority of them were married and living with their spouse at the time of the study in both the groups (more than 90%).

Table 7: Distribution of anganwadi women across two groups by their socio-economic status (N=376)

Socio-economic status	Intervention (n=186) n (%)	Control (n=190) n (%)
Lower/Lower middle	16(8.60%)	48(25.26%)
Middle	113(60.75%)	124(65.26%)
Upper Middle	57(30.65%)	18(9.47%)

$\chi^2=36.75$, df=2, $p<0.001$

Table 7 shows that anganwadi women who belonged to middle class were more in both the groups; whereas an inverse relationship was seen across the other two classes and this difference was found to be statistically significant.

Table 8: Distribution of anganwadi women according to their Religion (N=376)

Religion	Intervention (n=186)	Control (n=190)
	n (%)	n (%)
Hindu	178 (95.7)	187 (98.4)
Others	8 (4.3)	3 (1.5)

$\chi^2=2.452$, df=1, p=0.24

Table 8 shows that majority of the anganwadi women were Hindu by religion in both the groups (more than 95% in both the groups).

Table 9: Distribution of anganwadi women by their caste (N=376)

Caste	Intervention(n=186) n (%)	Control(n=190) n (%)
General	59 (31.7)	37 (19.4)
SC	75 (40.3)	88 (46.3)
ST	52 (27.9)	65 (34.2)

ST→Schedule tribe, SC→Schedule Caste

$\chi^2=7.4812$, df=2, **p=0.024**

Table 9 shows that more number of women belonged to SC category compared to other caste, and this difference was found to be statistically significant (p=0.024).

Table 10: Distribution of anganwadi women by their distance from the place of screening camp (N=376)

Distance	Intervention (n=186) n (%)	Control (n=190) n (%)
≤5 km	16 (8.6)	17 (8.9)
6-10Km	53 (28.44)	64 (33.6)
11-15 km	91 (48.92)	76 (40)
>15 km	26 (13.98)	33 (17.3)

$\chi^2=3.2001$, $df=3$, $p=0.362$

Table 10 shows that majority of the anganwadi women in both the groups were living at least 11 km away from the screening location. The distribution with the distance categories were distributed similarly across both the groups.

Outcome Assessment

Table 11: Breast cancer screening uptake among study participants (N=376)

	Attended for screening	
	Yes n (%)	No n (%)
Intervention	136 (73.4)	50 (26.8)
Control	102 (53.6)	88 (46.2)

$\chi^2=15.280$, $df=1$, $p<0.001$

Table 11 shows that, out of 376 anganwadi women (AWW and AWH) who were invited for the breast cancer screening service from both the groups, a total of 238 (63.2%) of them attended screening camp. The screening uptake was more in the intervention group (73.4%) compared to the control group (53.6%). This difference across the two groups (20%) was found to be statistically significant.

Table 12: Factors associated with the utilization of breast cancer screening service among anganwadi women (N=376)

Characteristics	Total (N=376) n	Attended Screening (N=238) n (%)	Unadjusted Risk ratio (95% CI)
Age			
30-40 years	147	96 (65.3)	1.27 (1.03 – 1.57)
41-50 years	110	81 (73.6)	1.43 (1.17 – 1.77)
51-60 years	119	61 (51.3)	1
Education			
Illiterate	30	21 (70.0)	1
Primary	90	38 (42.2)	0.60 (0.43 – 0.85)
Middle school	78	30 (38.5)	0.55 (0.38 – 0.79)
High School	120	101 (84.2)	1.20 (0.94 – 1.54)
PUC and above	58	48 (82.8)	1.18 (0.91 – 1.54)
Occupation			
Anganwadi workers	204	148 (72.6)	1.39 (1.18–1.64)
Helpers	172	90 (52.3)	1
Socio economic status*			
Lower/Lower middle	64	13 (20.3)	1
Middle class	237	166 (70.0)	3.45 (2.11 – 5.64)
Upper middle class	75	59 (78.7)	3.87 (2.35 – 6.38)
Marital status			
Married	348	214 (61.5)	1
Others [#]	28	24 (85.7)	1.39 (1.17–1.66)
Religion			
Hindu	365	232 (63.6)	1.17 (0.68–2.01)
Others ^{\$}	11	06 (54.6)	1
Caste			
General	96	91 (94.8)	2.09 (1.75–2.49)
Scheduled Caste	163	74 (45.4)	1
Scheduled Tribe	117	73 (62.4)	1.37 (1.10–1.71)
Distance			
<=5 km	33	23 (69.7)	1
6-10 km	117	80 (68.4)	0.98 (0.76–1.27)
11-15 km	167	91 (54.5)	0.78 (0.60–1.02)
>15km	59	44 (74.6)	1.07 (0.82–1.40)
Group			
Intervention	186	136 (73.1)	1.36 (1.16–1.60)
Control	190	102 (53.7)	1

CI → Confidence Interval, PUC→ Pre University College ^{\$}include Muslim/Christian
^{*}Modified BG Prasad Classification, July 2017 [#]include widow/divorcee/separated

Table 12 shows unadjusted analysis for various socio-demographic characteristics of study participants such as age, education, socioeconomic status, occupation, marital status, religion, caste, distance along with the group of study. The factors which showed higher utilization of breast cancer screening service among anganwadi women includes age (<50 years compared to 51-60 years category), occupation (AWW compared to AWH), socio-economic status (upper middle class compared to lower/lower middle class), marital status (women not belonging to married class attended more), and caste (General and ST compared to SC).Univariate analysis in **table 11**, shows that women in intervention group had about 36% higher chance of breast cancer screening uptake compared to control (95% CI of 16% to 60%).

Table 13: Multivariate analysis showing the factors associated with utilization of breast cancer screening among anganwadi women (N=376)

Characteristics	Adjusted Risk ratio (95 % CI)	p value
Age		
30-40 years	1.30 (1.08 – 1.56)	0.004
41-50 years	1.26 (1.04 – 1.51)	0.013
51-60 years	1	
Education		
Illiterate	1	
Primary	0.74 (0.55 – 0.99)	0.048
Middle school	0.70 (0.50 – 0.98)	0.041
High School	1.23 (0.96 – 1.5)	0.093
PUC [^] and above	1.35 (1.04 – 1.7)	0.024
Occupation		
Anganwadi worker	0.92 (0.78 – 1.09)	0.389
Anganwadi helper	1	
Socio economic status*		
Lower/Lower middle class	1	
Middle class	2.82 (1.75 – 4.52)	<0.001
Upper middle class	2.92 (1.80 – 4.72)	<0.001
Marital status		
Married	1	
Others [#]	1.71 (1.42 – 2.07)	0.011
Caste		
General	1.73 (1.46 – 2.05)	<0.001
Schedule Caste	1	
Schedule Tribe	1.48 (1.2 – 1.85)	<0.001
Group		
Intervention	1.00 (0.88 – 1.15)	0.965
Control	1	

CI → Confidence Interval, PUC→ Pre University College ^Sinclude Muslim/Christian

*Modified BG Prasad Classification, July 2017 [#]include widow/divorcee/separated

After adjusting for other confounders, on multi variable analysis, the factors which remained significantly associated with breast cancer screening uptake among the study participants include age, socio-economic status, caste and marital status.

Women in the age group of 31-40 years and 41-50 years had higher chance uptake of breast cancer screening; 30% and 26% higher chance respectively compared to the women in the category of 51-60 years.

Women who had primary or middle school had lesser chance of attending the screening camp compared to those who were illiterate (26% and 30% lesser chance respectively); while women with education PUC and above had 35% higher chance of screening uptake compared to illiterate women (range varying widely from 4% to 70%).

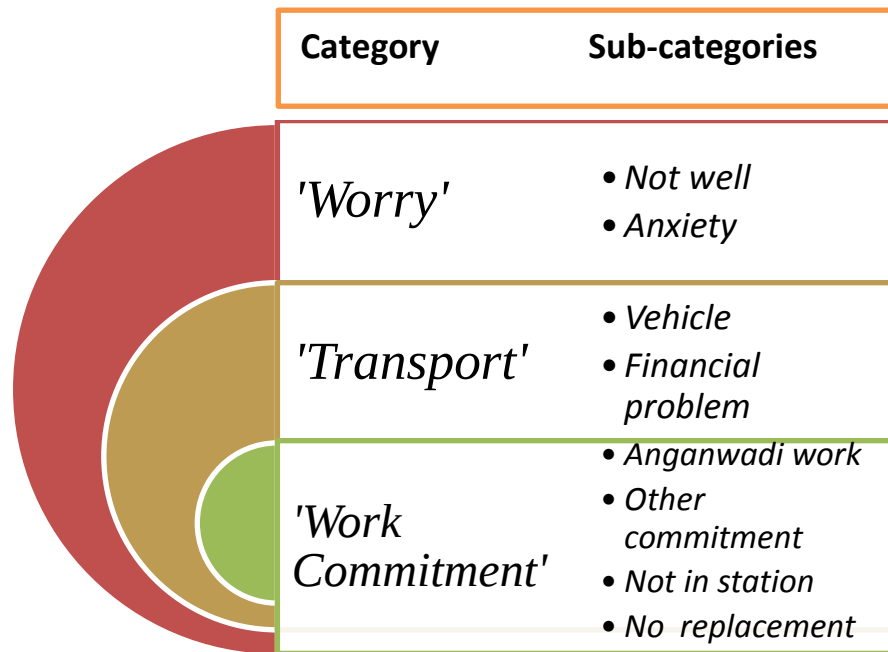
Women who were widow/divorcee/separated had a very high chance of attending the breast cancer screening camp (71% higher chance) compared to those women who were married and living with spouse.

Women who belonged to general or ST category had higher chance for breast cancer screening uptake (73% and 48% respectively) compared to those who belonged to SC category.

Women who belonged to middle class and above had about nearly three times higher chance of breast cancer screening uptake compared to lower/lower middle class.

Although univariate analysis showed a higher uptake of breast cancer screening in the intervention group, after adjusting for the confounders there was no difference in the uptake of screening across the two groups ($p=0.965$).

Figure 7: Barriers for breast cancer screening uptake among anganwadi women who did not undergo screening in Kolar district (N=138)



The theme '*Barriers to screening uptake*' were broadly divided into three main categories – namely '*worry*', '*transport*' and '*work commitment*'. These categories were further divided into eight sub-categories as shown in **figure 7**. The sub-category '*anxiety*' (31.9%) was reported to be the highest barrier and least was in the sub-category '*no replacement*' (4.3%). The frequency of response categorised into different sub-categories is as reported in **table 14**. The sub-categories are also supported by verbatim quotes as given in **table 15**.

Table 14: Barriers for breast cancer screening uptake according to the sub-categories among anganwadi women who did not undergo screening in Kolar district (N=138)

Category	Frequency	Percentage*
<i>Anxiety</i>	44	31.9
<i>Work commitment</i>	31	22.5
<i>Lack of transport</i>	29	21.0
<i>Other commitment</i>	21	15.2
<i>Financial problem</i>	19	13.7
<i>Not well</i>	16	11.5
<i>Not in station</i>	09	6.6
<i>No replacement</i>	06	4.3

*percentage calculated for N=138; Multiple responses were considered

Table 15: Verbatim quotes illustrating the barriers for breast cancer screening uptake among anganwadi women who did not undergo screening in Kolar district (N=138)

Sub-category	Quotes
<i>‘Not well’</i>	<i>“I got fever, back pain and headache for 3 days. I could not get up only and thatsy was unable to come for the examination...”(43 year old AWW)</i> <i>“I got severe pain abdomen and could not attend the screening.”(37 year old AWW)</i> <i>“Madam, I got severe headache and could not come to work... I took leave on that day...”(52 year old AWH)</i> <i>“I had been admitted in the hospital during that time... I got severe blood loss, due to irregular menstrual cycle; I got blood transfusion done in the hospital!!”(48 year old AWH)</i> <i>“I got fracture knee and doctor advised me to take rest for 2 months... I have to walk with a help of walker...”</i> <i>(49 year old AWW)</i>

‘Anxiety’	<i>“Madam, I was very much worried regarding examination....What if it comes positive? ... I got 3 children and my husband is a drunkard....!” (50 year old AWH)</i> <i>“I was very much scared to check breast cancer and I am alright know?.... no need to show to any doctor”</i> (32 year old AWW women) <i>“Myself already got the menopause, and I am divorce... I am anxious, what if it comes positive? No one is there to look after me....” (A 55 year old AWH)</i> <i>“No one in my family had the history of breast cancer and I am 100% sure I won’t get, and I am scared to get the check done.... ” (58 year old AWH)</i> <i>“I am already suffering from diabetes and hypertension. Now only I am not able to take the stress because of these two diseases and again one more disease that to cancer ...so madam I dint come for screening....”(A 59 year old AWH)</i>
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<i>‘Vehicle’</i>	<i>“My scooty got puncherd and I waited for a long time for bus, could not get any that time, and then returned home. I wanted to get the check done... but could not.....(40 year old AWW)</i> <i>“My village is 10km away from the screening area and I got knee pain, could not walk for a short distance also... My son will go to work early in the morning and cannot ask him to drop me”(56 year old AWH)</i>
<i>‘Financial problem’</i>	<i>“My place is 14 km away from the screening place, and there are no proper transport facilities for me to come on time, and I need around 50 rupees, if I come for screening...Madam ”</i> (56 year old AWH <i>“If I want to come for screening I have to spend 40 rupee and, and I am the only earning women in the family, my son and daughter are still studying...If I had that 40 rupee it will be helpful for me in some other time...!”(46 year old AWH)</i>

‘Anganwadi work’	<i>“I knew that there was a breast cancer screening camp, but because of work commitment I could not attend madam... I have to prepare food for children, as well for pregnant women here” (38 year old AWH)</i> <i>“There was sudden visit by the Taluk health officer to our anganwadi and I was instructed to stay in the anganwadi on that day...”(40 year old AWW)</i> <i>“On that day of examination, we were instructed to conduct Seemantha (Baby Shower) for pregnant women in Anganwadi. Since this was the first function in our anganwadi I could not attend the screening camp...”(45 year AWW)</i> <i>“There were 15 children and 5 pregnant women in my Anganwadi, I have prepare food for them and feed the children and serve the pregnant women. By the time I finished the work I became late and could not get the bus also...” (46 year old AWH)</i>
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‘Other commitment ’	<i>“Madam.....I got some other work on that day and I was unable to attend...” (50 year old AWW)</i> <i>“I have to clean my house, since next week was the Diwali, and not got the time to attend the screening programme...” (36 year old AWH)</i>
‘Not in station’	<i>“I have to attend my cousin marriage on that day, so I could not attend”(30 year old AWW)</i> <i>“I was not in station, went to Tirupathi with my family members...”(39 year old AWH)</i>
‘No replacement’	<i>“I have to attend parents meeting of my kids and my husband cannot attend the parents meeting because he is working in Bangalore, and I have to attend the meeting” (35 year old AWW)</i> <i>“My mother-in-law was sick and I have to look after her.... If I come there who will take care of her?”(58 year old AWW)</i> <i>“Anganwadi teacher (AWW) took leave on the day of screening, I wanted to come for screening, but because she was on leave I have to look after the Anganwadi...” (47 year old AWH)</i>

Discussion

A decorative flourish consisting of a vertical line with a fleur-de-lis at the top and a horizontal line with a fleur-de-lis at the left end, intersecting at the bottom right of the word "Discussion".

6. DISCUSSION

Screening for breast cancer in poor resource settings presents itself a great challenge, particularly when the population do not perceive it as a priority. The literature about interventions to increase attendance to breast cancer screening was reviewed. Literature about the facilitators and barriers in attending cancer screening were also reviewed to gain a better understanding and for comparability with the current study. Studies done in other countries have shown that involvement of trained community healthcare workers did increase the compliance to breast cancer screening among asymptomatic women in low income rural communities. The prerequisite for any high level screening program includes certain essential elements or packages such as high quality screening, high coverage, high rate of participation, and effective referral system for diagnosis and treatment.⁶⁹ However, there are no such nationally organized screening programmes currently running for breast cancer in India.

Our study was designed with background knowledge of the Department of Community Medicine, SDUMC working in Kolar district to improve the uptake of cervical cancer screening camps among women. The approaches adopted included pamphlet distribution, miking and communication with the help of ASHA workers. The current study was designed with the knowledge that women in the grass root level of healthcare system first needs to accept and participate in screening camps to know the benefits of it and thus would participate more efficiently in future as health promoting agents for screening among women in the community. Breast cancer was chosen to study as the screening procedure was more culturally acceptable, lack of screening activities in breast cancer compare to cervical cancer in the country, and the increase in breast cancer incidence compared to other cancers among women in India.

Effectiveness of two different types of communication to improve breast cancer screening uptake

The current study among the AWW and AWH showed increased uptake of breast cancer screening in both the intervention (communication by anganwadi supervisors and in-charge PHC MO) and control (communication by anganwadi supervisors) groups. A total of 238 out of 376 anganwadi women (63.2%) attended screening camp. The uptake of screening was more in the intervention group (73.4%) compared to the control group (53.6%). This difference of 20% was found to be statistically significant on univariate analysis ($p < 0.001$). After adjusting for confounders it was found that both the approaches were equally effective and there was no superiority of one approach over the other.

A RCT done in Italy about two decades back, showed that uptake of breast cancer screening was higher in the group which received a letter of invitation signed by the general practitioner along with a pre-fixed appointment date compared to the letter signed by the project co-ordinator.^[53] The current study utilised a similar interventional package wherein the in-charge PHC MO invited the anganwadi women during the monthly meet along with the date and place of screening (which is similar to the pre-fixed appointment in the study from Italy). This intervention using the MO showed an extra 20% increase in screening uptake over the similar communication done by the anganwadi supervisors in the current study. The findings are concurrent with the study from Italy. Comparing the effect sizes cannot be done because of the difference in the socio-demographic background, different study population (Italy study was conducted among general women population) and also varied timeline (studies are separated by two decades) which would influence the outcome and also the Italy study has not done any adjusting for confounders.

Most of the studies done in India show very poor uptake to breast cancer screening owing to many reasons. The percentages of uptake vary from as low as 3% to a maximum of 30% among general women.^[56] Breast cancer screening programme involving anganwadi women who are part of general population with expectedly higher health awareness deserve to enlist a higher participation. The current study result showed that more than half of AWW and AWH turned up for the breast cancer screening camp with either of the communication approaches.

Other RCTs done in developed countries using letters and/or telephonic calls showed that breast cancer screening attendance among general population was improved to about 56% to 67%.^[46,49] The current study also showed an overall screening uptake to be similar to the developed countries (63%). We have adopted a strategy that is more applicable to the low and middle income countries by doing communication face-to-face rather than letters and telephones and by persons who are known to the women, which may be essentiality owing to the status of women in these countries.

The current study results cannot be generalized to the general women population, but, this shows that an approach by health care personnel who are known to the women can influence women in attending such cancer screening camps. Anganwadi supervisors play an important role in the day to day work of AWW and AWH and are well known to them. Supervisors directly monitor the work of the anganwadi worker on the spot when she is actually conducting the activities. This strategy can further be extrapolated to the general women population wherein AWW and AWH who are in direct contact with the women and form a line of continuum of care in the primary health care setup in India and thus be used as mode of communication to improve attendance at these screening camps.

Factors affecting uptake of breast cancer screening

The current study showed that age, socio-economic status, caste, marital status and educational status were independent predictors in breast cancer screening uptake (see **table 14**). There is very limited literature especially from low and middle income countries that have analysed the factors contributing to the increased breast cancer screening uptake. This study could be high yielding in aspect of identifying the target groups that could result in increasing the effectiveness of strategies adopted to increase screening uptake. As the factors are estimated after adjusting for the intervention these factors can be studied independently without the influence of any strategy or intervention.

Age: Our study showed that anganwadi women in the fourth and fifth decade had higher chance of attending the breast cancer screening camps compared to women in the fifth decade (30% and 26% respectively). Similar findings were noted in studies done in India and other countries.^[57,58] This could be attributed to the younger age women being more aware of such screening programmes and thus more health conscious. These women may also have more family support and also family responsibilities and thus may be more receptive to the concept of getting screened which could result in early diagnosis and treatment. This also calls for planning interventions in tapping these younger women who are more receptive to such screening programmes and thus could increase the breast cancer screening uptake in general women population.

Socio-economic status: The study showed that anganwadi women belonging to upper middle or upper class had about three times more chance of participating in breast cancer screening programmes compared to women in the lower or lower middle class. The findings are concurrent with studies in developed country which showed that screening uptake decreased with increased socio-economic deprivation.^[24,59] The reasons could be many with major factor being loss of wages or the travel expenses to the site of screening among working women population (these were also the reasons cited by women who could not attend screening in current study). Other reason could be also due to the minimal importance given to health among the lower social strata and also lack of independency in decision making and thus making them dependant on family members mostly spouse to take them for screening site.

Marital status: The study showed that anganwadi women who were widow/divorcee/separated had a higher chance of attending the breast cancer screening camp (71% higher chance) compared to those women who were married and living with spouse. There is no literature reporting marital status as a factor for breast cancer screening uptake. The reasons that widow/divorce women are attending screening camps more can be attributed to their responsibility of looking after the family. Most often they are the sole earning member in the family and thus may have a higher health commitment of attending the screening and to know their health status. This also points the importance of women making their own decisions and not being dependant on other family members or spouse for decision making.

Education: Our study showed an interesting finding wherein those anganwadi women who have education of PUC and above had attended screening more compared to illiterate women. But anganwadi women who had primary or secondary schooling showed a significant lesser uptake for screening compared to illiterate women. This effect can partly be explained by the regression analyses wherein the effect of occupation is lost in adjusted analysis (which was significant in univariate analysis with AWW showing a higher uptake compared to AWH) and thus education status may be showing such a peculiar result.

Caste: Our study showed that anganwadi women belonging to general category or ST category had higher chance of attending screening compared to women belonging to SC category (73% and 48% respectively). This result is seen after adjusting for socio-economic status and educational status and thus these variables cannot be used to explain this effect. Although we can attribute to the level of importance given to health and familial support influencing the general category people same cannot be applied to those belonging to ST people. Thus further studies involving some ethnographical study designs may be required to explain this effect seen in the study.

Other factors which were studied but did not show any significance included religion, occupation and distance of screening facility from their home. As almost all anganwadi women except eleven of them belonged to Hindu religion we could not explore the effect of religion in our study. With respect to the distance to the screening site, previous study has shown that as the distance increased the chance of screening uptake reduced.^[59] In our study the screening camps were held at the PHC which was familiar to anganwadi women and even if the distance was more to these women they may not feel the difference compared to general population owing to the

fact that it is a place where they visit often during their monthly routine activities. Similarly, occupation may not have a major role because there was a separate day allotted for screening for AWW and AWH and thus there could not be much hindrance to the anganwadi activity and hence, more chance of participation in screening camp.

Barriers for breast cancer screening uptake among anganwadi women who did not undergo screening

High response rate is an essential aspect for the success of any screening programme. The literature for barriers to breast cancer screening from qualitative studies is lacking from India. Studies conducted in countries like China and USA to identify the barriers were mostly based on utilising belief questionnaire models, finding barriers in specific groups who had disability or specific conditions like multiple sclerosis, or studied on culture specific population with more emphasis on migrants.^[60–64] The current study is the first to look into barriers among anganwadi women which may not be generalizable to other women. But, few factors can be extrapolated and be a thought provoking for implementation of screening programmes in countries like India. In this study telephonic interviews were done for all the women who did not turn up to breast cancer screening and some of them who explained the reasons elaborately were documented in their own words as verbatim quotes to retain the depth of the barriers.

These barriers were categorised into three main categories and eight sub-categories. Discussion of these categories will be done under these categories and sub-categories.

‘Worry’

In this category we have two sub-categories that depict the nature of barriers; one being a direct one *‘anxiety’* and other a proxy measure of worry *‘not well’* which could be the main reason expressed by the participants. This domain when explored showed various barriers and also gave insights which our quantitative results could not detect.

The quantitative study showed that those who were widow/separated/divorcee actually attended the breast cancer screening more. The qualitative part gave insight that among this group of people the reasons for not attending could be more related to *‘anxiety’*. The anxiety issue was again related to those who were having chronic diseases like diabetes, hypertension who are already on long term treatments for the same. They expressed that being on these long term treatments had set in a barrier wherein they do not need further new diagnosis to be made and put on more treatment for the same.

‘Anxiety’ related to positive diagnosis was seen across various categories of women which is concurrent with reports from other studies done across different countries. Also another barrier identified was the knowledge and belief that only those who had family history of breast cancer must get checked and others need not. We have included reasons for *‘not being well’* to be a barrier under category of *‘worry’* as this is the most often quoted reason by women who are having anxiety to get screened. This reason was also found to be the most cited one as a reason for non-attendance in the current study.

These aspects emphasize the need for more awareness creation in these anganwadi women and also in the general community from which they come from as there could not be a much better scenario in the general public who in fact are less informed than our target population.

‘Transport’

This is identified as a most important barrier in most studies that assessed for barriers. Although the quantitative analysis showed that distance from screening facility was not significantly associated with screening uptake, the qualitative study gave a contradictory insights.

Almost one fourth of the women who did not undergo screening cited reasons related to this domain as a primary barrier. Some of the barriers were directly related to non-availability of transport whereas others were also related to *‘financial problem’* in reaching the screening place. Some gave the reason as money that is to be spent for transport could be utilised for some other purpose which carried more weightage than screening for them.

This call for inclusion of the distance from screening facility as a prime importance while planning for screening among women. Though the current study had chosen a place which was well known to the anganwadi women and which they access at least once in a month; it was found that transport was available for them from various means for free as part of their duty which was not the scenario on the day of screening. Prior plan for travel and financial allocations must be considered in the breast cancer screening programme. This could actually result in a substantial increase in the screening uptake as most of these women were willing to get screened unlike those who were in the *‘anxiety’* domain.

‘Work commitment’

As per the screening plan we had taken necessary steps so as to make at least AWW or AWH available for anganwadi work on the day of screening (this was done by conducting screening on different days for AWW and AWH). Still due to the absence of one of them on the screening day the other could not attend the screening. Few of them also reported *‘Anganwadi related work’* as a reason for not attending screening and some cited ‘no replacement’ for them at job and personal level factors. Some cited ‘out of station’ as a reason for not attending the screening camps.

An interesting reason cited by some women was *‘Diwali festival related work’*. It was found that one of the screening days happened to be about a week before the Diwali festival which could be a barrier in attending screening in some women. Although the festival was taken into consideration while planning for screening, the drop out even before a week was not anticipated among the participants.

This domain gave various reasons cited by women, but none could actually be addressed at the planning level or be analysed at general population level. This barrier gave reasons which mostly varied from person to person and could be addressed only by increasing the awareness on the importance of screening in a way that women perceive it over and above the personal reasons cited. This also gave an important consideration in planning for a screening program which includes culture specific practices during festivals. As most of the women were Hindu by religion and thus *‘Diwali’* being a major festival, *‘work related to the festival’* takes precedence in the lives of these women even a week or many days before the festival which is a common practice. Though this was anticipated, the *‘work’* taking overwhelming

precedence even a week before the actual festival date was not anticipated. This can be a message for planning any further screening programme among these women.

Summary & Conclusion



7. SUMMARY AND CONCLUSION

A facility based cluster randomized trial was carried out among AWW and AWH of Kolar and Bangarpete taluks of Kolar District for a period of 18 months from September 2016 to August 2018, with the objective to assess the effectiveness of reinforcement of communication by in-charge primary healthcare medical officer in breast cancer screening uptake as compared to communication by anganwadi supervisor alone.

Two Talukas were selected randomly using a lottery method in Kolar district and allocated into intervention and control groups. Four PHCs were selected in each of the two talukas, The list of anganwadi workers and the anganwadi helpers belonging to the anganwadi centres under these selected PHC's formed the sampling frame for the current study (AWW and AWH).

The trained anganwadi supervisor followed by the respective in-charge PHC MO invited the AWW and AWH for breast cancer screening in the intervention group, while only the anganwadi supervisor invited in control group.

The current study among the AWW and AWH showed increased uptake of breast cancer screening in both the groups. A total of 238 out of 376 anganwadi women (63.2%) attended screening camp.

The uptake of screening was more in the intervention group (73.4%) compared to the control group (53.6%). This difference of 20% was found to be statistically significant on univariate analysis ($p < 0.001$). After adjusting for confounders it was found that both the approaches were equally effective and there was no superiority of one approach over the other.

Many barriers were involved in non-participation for breast cancer screening. The reasons were identified by using 'single question' interview guide, and were categorized into '*worry*', '*transport*' and '*work-commitment*'. Barrier in '*worry*' category was found to be highest.

Limitations



8. LIMITATIONS

1. Usage of a ‘single question’ interview guide for telephonic interviews could have resulted in lesser exploration of various domains associated with barriers to screening uptake.
2. With the design of RCT adopted, we have assumed that the awareness regarding the breast cancer screening across two taluks would be similar; which may not be realistic. It would have been better if the baseline awareness level was assessed and adjusted for confounding. This limitation was partly addressed by adjusting proxy measures like education and socio-economic status for this confounding factor (awareness level).
3. We cannot rule out the possibility of contamination of intervention across two groups although it would be rare owing to the geographical location of these two taluks.

Recommendation



9. RECOMMENDATIONS

1. The study highlights the importance of using communication through a known health worker (superior in the chain of hierarchy) to be effective in improving the screening uptake among anganwadi women. This model can be tested in other health and non-health related occupations.
2. Since the study has identified certain barriers like non-availability of transport, cost of travel and coincidence of major social or cultural events may be taken into consideration while planning for any further similar screening programmes.
3. Similar study may be replicated using the services of grass root level health workers (e.g. Anganwadi women, ASHA) , as acceptability of such workers could be more by the community as they are familiar to such health workers.
4. To create more awareness among the anganwadi women (since the qualitative part of the current study revealed a hiatus in their awareness level) so that their services can be gainfully utilized as the agents for health communication at the community level.

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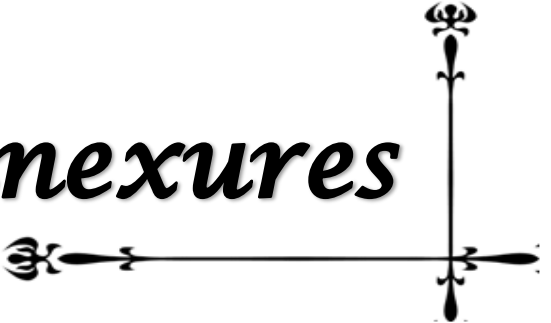
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Annexures

A decorative flourish consisting of a horizontal line with ornate, symmetrical scrollwork at both ends, and a vertical line intersecting it at its right end, also featuring ornate scrollwork at its top and bottom.

ANNEXURE I

PROFORMA FOR DATA ACQUISITION

Investigators name

Date

Sl no	Questions	Response
1	Name	
2	Age	
3	Sex	
4	Education	
5	Caste	
6	Address	
7	Marital status	
8	Religion	
9	Occupation	
10	Phone number	
11	Total family income Per month	
12	Distance from Screening area	

ANNEXURE II

PROFORMA – To know the barriers for breast cancer screening uptake among anganwadi women who did not undergo screening

Investigators

Date

Sl no	Questions	Response
1	Name	
2	Age	
3	Sex	
4	Education	
5	Caste	
6	Address	
7	Marital status	
8	Religion	
9	Occupation	
10	Phone number	
11	Total family income Per month	
12	Distance from Screening area	
13	Non participation reasons	

ANNEXURE III

Institutional Ethical Clearance for PG Students

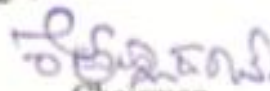
**SRI DEVARAJ URS MEDICAL COLLEGE
TAMAKA, KOLAR – 563101**

ETHICS COMMITTEE CERTIFICATE

This is to certify that the ethics committee of Sri Devaraj Urs Medical College, Kolar in its meeting conducted on **16-12-2016** has unanimously approved the synopsis for the dissertation entitled **"Effectiveness of communication in promoting utilization of breast cancer screening services among women working in anganawadi centers"** to be submitted to Sri Devaraj Urs Academy of Higher Education and Research, Kolar, Karnataka, by **Dr. Swathi H. J.** Postgraduate student in the department of **M.D.Community Medicine** at Sri Devaraj Urs Medical College, Kolar


Member Secretary
Institutional Ethics Committee
SDUMC, Tamaka Kolar

Member Secretary
Institutional Ethics Committee
Sri Devaraj Urs Medical College
Tamaka, Kolar
Date: 19-12-2016
Place: Kolar


Chairman
Institutional Ethics Committee
SDUMC, Tamaka Kolar

CHAIRMAN
Institutional Ethics Committee
Sri Devaraj Urs Medical College
Tamaka, Kolar

ANNEXURE IV


ಮಹಿಳಾ ಮತ್ತು ಮಕ್ಕಳ ಅಭಿವೃದ್ಧಿ ಇಲಾಖೆ, ಕೋಲಾರ
 ಉಪ ನಿರ್ದೇಶಕರ ಕಛೇರಿ, 1ನೇ ಮಹಡಿ, ಸ್ಟಾ ಕೋಲಾರ ಅರಣ್ಯ ಕಟ್ಟಡ, ಎಂ.ಎಂ. ನಗರ, ಕೋಲಾರ-563101
 ದೂರ:08152-22753, 223665 Email- ddwcdkolar@gmail.com
 ಸಂಘನಿರ್ದೇಶನಮಹಾಧಿಕಾರಿ-02/2017-18 ದಿನಾಂಕ:13.10.2017

ರವರಿಗೆ,
 ಶಿಶು ಅಭಿವೃದ್ಧಿ ಯೋಜನಾಧಿಕಾರಿಗಳು
 ಕೋಲಾರ, ಬಂಗಾರವೇಟೆ.

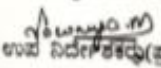
ಮಾನ್ಯರೇ,

ವಿಷಯ: ಅಂಗನವಾಡಿ ಕಾರ್ಯಕರ್ತೆಯರ/ಸಹಾಯಕಿಯರ ಆರೋಗ್ಯಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟಂತೆ
 ಸಂಶೋಧನೆಗೆ ಸಹಕಾರ ನೀಡುವ ಬಗ್ಗೆ
 ಉಲ್ಲೇಖ: ಡಿ.ಎಂ.ಸಿ/ಕೆ.ಎಲ್.ಆರ್/ಕೋಲಾರ:2017-18 ದಿ:09.10.2017.

* * * * *

ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಉಲ್ಲೇಖಿತ ಪತ್ರದಲ್ಲಿ ಶ್ರೀ ದೇವರಾಜ್ ಅರಸ್ ಮಡಿಕಲ್ ಕಾಲೇಜಿನಲ್ಲಿ
 ಡಾ.ಪ್ರಾಜಿ ಹೆಚ್.ಜೆ ರವರು ಕಮ್ಯೂನಿಟಿ ಮೆಡಿಸಿನ್‌ನಲ್ಲಿ ಸ್ನಾತಕೋತ್ತರ ಪದವಿ ಮಾಡುತ್ತಿದ್ದು, ಸದರಿ ವಿದ್ಯಾರ್ಥಿಯು
 ಅಂಗನವಾಡಿ ಕೇಂದ್ರಗಳಲ್ಲಿ ಕಾರ್ಯನಿರ್ವಹಿಸುತ್ತಿರುವ ಅಂಗನವಾಡಿ ಕಾರ್ಯಕರ್ತೆಯರು/ಸಹಾಯಕಿಯರ
 ಆರೋಗ್ಯಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಸಂಶೋಧನೆಗಾಗಿ ಕೋಲಾರ ಮತ್ತು ಬಂಗಾರವೇಟೆ ಯೋಜನೆಗಳಲ್ಲಿ ಅನುಮತಿ
 ನೀಡುವಂತೆ ಕೋರಿದ್ದು, ಆದರಂತೆ ಸದರಿ ವಿದ್ಯಾರ್ಥಿಗೆ ತಮ್ಮ ಯೋಜನೆಗಳಲ್ಲಿ ಸಹಕಾರ ನೀಡುವಂತೆ ಈ ಪತ್ರದ
 ಮೂಲಕ ಸೂಚಿಸಲಾಗಿದೆ.

o/c.

ತಮ್ಮ ನಂಬುಗೆಯ

 ಉಪ ನಿರ್ದೇಶಕರು(ಪ್ರಧಾನ)
 ಮಹಿಳಾ ಮತ್ತು ಮಕ್ಕಳ ಅಭಿವೃದ್ಧಿ ಇಲಾಖೆ
 ಕೋಲಾರ.

ಪ್ರತಿಯನ್ನು: ಪ್ರಾಧ್ಯಾಪಕರು/ಹೆಚ್.ಡಿ. ಕಮ್ಯೂನಿಟಿ ಮೆಡಿಸಿನ್, ಶ್ರೀ ದೇವರಾಜ್ ಅರಸ್ ಮಡಿಕಲ್ ಕಾಲೇಜ್,
 ಕೋಲಾರ.

Handwritten signature and date: 16/10/2017

ANNEXURE V

Modified BG Prasad classification

Socio-Economic status:

Modified B.G. Prasad classification was used for socio-economic status for rural and urban families according to per capita income for month of January 2018 (Consumer Price Index for Month of January 2018)

Modified BG Prasad classification according to 2018

Socio economic classification	Per capita monthly income	
	In 1961	In 2018
Upper class	≥ 100	≥ 6574
Upper middle class	50-99	3287-3286
Middle class	30-49	1972-3286
Lower middle	15-29	986-1971
Lower class	<15	<985

ANNEXURES VI

Information sheet

Title of the study: **Effectiveness of communication in promoting utilisation of breast cancer screening services among women working in anganwadi centres**

My name is Dr. Swathi H J, Post graduate in the department of Community Medicine, Sri Devaraj Urs Medical College, and Kolar. We are carrying out a study on **Effectiveness of communication in promoting utilisation of breast cancer screening services among women working in anganwadi centres**

Breast cancer is a leading cause of death among women in developing countries. The incidence and mortality rates of breast cancer are lower in developing than the developed countries, but the case fatality rates are reported to be high. Breast cancer screening in developing countries is mainly screening of opportunistic. There is no organized screening program for breast cancer in the country. Hence a large proportion of women with cancer of the breast present in advanced stages of cancer.

In this regard, I would interview you with some questions. We would greatly appreciate your help in responding to this survey. All the information collected from you will be strictly confidential and will not be disclosed to any outsider unless compelled by law. This information collected will be used only for research. The study involves collecting socio demographic information along with clinical breast examination.

There is no compulsion to participate in this study. You will be no way affected if you don't wish to participate in this study. You are required to sign only if you voluntarily agree to participate in this study. Further, you are at a liberty to withdraw from the study at any time, if you wish to do so. Be assured that your withdrawal will not affect your treatment by the concerned physician in any way. It is up to you to decide whether to participate. For any further clarification you are free to contact the principal investigator,

Dr. Swathi H J

Mobile No-8762161955

ANNEXURE VII

ಅಂಗನವಾಡಿ ಕೇಂದ್ರಗಳಲ್ಲಿ ಕೆಲಸ ಮಾಡುವ ಮಹಿಳೆಯರಲ್ಲಿ ಸ್ತನ ಕ್ಯಾನ್ಸರ್ ಸ್ಕ್ರೀನಿಂಗ್ ಸೇವೆಗಳನ್ನು ಬಳಸಿಕೊಳ್ಳುವಲ್ಲಿ ಸಂವಹನ ಪರಿಣಾಮ

ಶ್ರೀ ದೇವರಾಜ್ ಅರಸ್ ಮೆಡಿಕಲ್ ಕಾಲೇಜ್, ಕೋಲಾರ - 563101

ಮಾಹಿತಿ ಪತ್ರ

ಡಾ|| ಸ್ವಾತಿ ಶ್ರೀ ದೇವರಾಜ ಅರಸ್ ವೈದ್ಯಕೀಯ ಮಹಾವಿದ್ಯಾಲಯ, ಕೋಲಾರದಲ್ಲಿ ಸಮುದಾಯ ವೈದ್ಯಕೀಯ ವಿಭಾಗದಲ್ಲಿ ಸ್ನಾತಕೋತ್ತರ ಪದವಿ ವಿದ್ಯಾರ್ಥಿನಿಯಾದ ನಾನು “ಅಂಗನವಾಡಿ ಕೇಂದ್ರಗಳಲ್ಲಿ ಕೆಲಸ ಮಾಡುವ ಮಹಿಳೆಯರಲ್ಲಿ ಸ್ತನ ಕ್ಯಾನ್ಸರ್ ಸ್ಕ್ರೀನಿಂಗ್ ಸೇವೆಗಳನ್ನು ಬಳಸಿಕೊಳ್ಳುವಲ್ಲಿ ಸಂವಹನ ಪರಿಣಾಮ” ಎಂಬ ಸಂಶೋಧನೆಯನ್ನು ನಡೆಸುತ್ತಿದ್ದೇನೆ. ಈ ಅಧ್ಯಯನವನ್ನು ನೈತಿಕ ಸಮ್ಮತಿಯಿಂದ ಮರುಪರಿಶೀಲನೆ ಪಟ್ಟಿ ಮೇಲೆ ಪ್ರಾರಂಭಿಸಲಾಗುವುದು.

ಅಧ್ಯಯನಕ್ಕಾಗಿ ಸಮ್ಮತಿ

ಸ್ತನ ಕ್ಯಾನ್ಸರ್- ಸ್ತನದ ಅಂಗಾಂಶದಿಂದ ಬೆಳೆಯುತ್ತದೆ. ಸ್ತನ ಕ್ಯಾನ್ಸರ್‌ನ ಚಿಹ್ನೆಗಳಾದ, ಸ್ತನದಲ್ಲಿ ಬದಲಾವಣೆ, ಬೊಜ್ಜು, ಮುಂಚಿನ ವಯಸ್ಸಿನಲ್ಲಿ ಮೆನಾರ್ಚೆ, ಕುಟುಂಬ ಇತಿಹಾಸ ಇತರೆ. ಮುಂಚಿತವಾಗಿ ಪತ್ತೆಹಚ್ಚುವಿಕೆ, ಫಲಿತಾಂಶಗಳನ್ನು ಸುಧಾರಿಸುತ್ತದೆ. ಮುಂಚಿನ ರೋಗನಿರ್ಣಯವನ್ನು ಸಾಧಿಸುವ ಪ್ರಯತ್ನದಲ್ಲಿ ಸ್ತನ ಕ್ಯಾನ್ಸರ್‌ಗಾಗಿ ಆರೋಗ್ಯವಂತ ಮಹಿಳೆಯರನ್ನು ಪರೀಕ್ಷಿಸಲು ಸ್ತನ ಕ್ಯಾನ್ಸರ್ ಸ್ಕ್ರೀನಿಂಗ್ ಸೂಚಿಸುತ್ತದೆ. ಸಾಮಾನ್ಯವಾಗಿ ಬಳಸುವ ಸ್ಕ್ರೀನಿಂಗ್ ವಿಧಾನಗಳು, ಸ್ತನಗಳ ದೈಹಿಕ ಪರೀಕ್ಷೆ ಮತ್ತು ಮ್ಯಾಮೋಗ್ರಫಿ.

ನೀವು ನಿಮಗೆ ಉತ್ತರ ನೀಡಲು ಇಚ್ಛೆ ಇಲ್ಲದಿರುವ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಗಳನ್ನು ನೀಡಬೇಕಾಗಿಲ್ಲ. ನಿಮ್ಮ ಉತ್ತರ ನಮಗೆ ನಿಮ್ಮ ಪರಿಸರದ ಆರೋಗ್ಯ ಸ್ಥಿತಿಯನ್ನು ತಿಳಿಯಲು ಸಹಕಾರಿಯಾಗುತ್ತದೆ ಹಾಗೂ ಈ ಸಂಶೋಧನೆಯಲ್ಲಿ ನಿಮ್ಮ ಪಾತ್ರವನ್ನು ನಾವು ಶ್ಲಾಘಿಸುತ್ತೇವೆ. ಈ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲು ಅರ್ಧಘಂಟೆ ಕಾಲಾವಕಾಶವಾಗಬಹುದು.

ಈ ಸಂಶೋಧನೆಯಲ್ಲಿ ಭಾಗವಹಿಸಲು ನಿಮಗೆ ಯಾವುದೇ ರೀತಿಯ ಖರ್ಚು ತಗಲುವುದಿಲ್ಲ. ಈ ಸಂಶೋಧನೆಯಿಂದ ನಿಮಗೆ ಮಾತ್ರವಲ್ಲದೆಯೇ ನಿಮ್ಮ ಸಮುದಾಯಕ್ಕೂ ಅಧಿಕವಾಗಿ ಉಪಯೋಗ ದೊರೆಯಲಿದೆ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಸಂಗ್ರಹಿಸಿದ ಮಾಹಿತಿಗಳ ಸಹಕಾರದಿಂದ ಈಗ ದೊರಕುತ್ತಿರುವ ಆರೋಗ್ಯ ಸೇವೆಗಳನ್ನು ಮೌಲ್ಯಮಾಪನ ಮಾಡಲು ಸಹಕಾರಿಯಾಗಿದೆ.

ನಿಮ್ಮಿಂದ ಸಂಗ್ರಹಿಸಿದ ಎಲ್ಲಾ ಮಾಹಿತಿಗಳನ್ನು ಗೌಪ್ಯವಾಗಿ ಇಡಲಾಗುವುದು ಹಾಗೂ ಕಾನೂನಿನ ಪರಿವಿಧಿಗೆ ಅಗತ್ಯವಿದ್ದರೆ ಮಾತ್ರ ಬಹಿರಂಗಪಡಿಸಲಾಗುವುದು. ನಿಮ್ಮಿಂದ ಪಡೆದ ಮಾಹಿತಿಗಳು ಕೇವಲ ಸಂಶೋಧನೆಗಾಗಿ ಮಾತ್ರ ಉಪಯೋಗಿಸಲಾಗುವುದು.

ಈ ಸಂಶೋಧನೆಯಲ್ಲಿ ಕಡ್ಡಾಯವಾಗಿ ಭಾಗವಹಿಸಬೇಕೆಂದೇನು ಇಲ್ಲ. ನೀವು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸದೇ ಇದ್ದರೂ ಸಹ ನಿಮಗೆ ಯಾವುದೇ ರೀತಿಯ ತೊಂದರೆಯಾಗುವುದಿಲ್ಲ. ನೀವು ನಿಮ್ಮ ಸ್ವ-ಇಚ್ಛೆಯಿಂದ ಭಾಗವಹಿಸಿದರೆ ಮಾತ್ರ ಸಹಿ ಮಾಡಬೇಕಾಗುತ್ತದೆ.

ಈ ಸಂಶೋಧನೆಯ ಮಾಹಿತಿಯನ್ನು ಕಾಲೇಜಿನ ಸಮುದಾಯ ವೈದ್ಯಕೀಯ ವಿಭಾಗದಲ್ಲಿ ಜಾಗೃತೆಯಿಂದ ಇಡಲಾಗುತ್ತದೆ.

ಹೆಚ್ಚಿನ ಮಾಹಿತಿಗಾಗಿ ಮುಖ್ಯ ಸಂಶೋಧಕರನ್ನು ಸಂಪರ್ಕಿಸಿರಿ.

ಡಾ|| ಸ್ವಾತಿ -8762161955

ANNEXURE VIII

INFORMED CONSENT FORM

Title: Effectiveness of communication in promoting utilisation of breast cancer screening services among women working in anganwadi centres

The doctor/nurse explained to me in detail about the services on Purpose of screening, early detection and prevention of breast cancer.

It was explained that I will be interviewed to collect information as part of medical investigation and services.

I agree/ do not agree to be interviewed and to participate.

I have been read out/ explained in my local language i.e. in _____ and understand the purpose of this study and the confidentiality of the information that will be collected during the study. I have had the opportunity to ask questions regarding the various aspects of this study and my questions have been answered to my full satisfaction. The information collected will be used only for research. I understand that I remain free to withdraw from this study at any time. Participation in this study is under my sole discretion and does not involve any cost to me

Subject's name and signature /thumb impression

Date:

Name and signature of interviewer:

Date:

Principal Investigator: Dr. Swathi H J

Contact No: 8762161955

ANNEXURE IX

ಅಂಗನವಾಡಿ ಕೇಂದ್ರಗಳಲ್ಲಿ ಕೆಲಸ ಮಾಡುವ ಮಹಿಳೆಯರಲ್ಲಿ ಸ್ತನ ಕ್ಯಾನ್ಸರ್ ಸ್ಕ್ರೀನಿಂಗ್ ಸೇವೆಗಳನ್ನು ಬಳಸಿಕೊಳ್ಳುವಲ್ಲಿ ಸಂವಹನ ಪರಿಣಾಮ

ಸಮ್ಮತಿ ಪತ್ರ :

ಈ ಸಂಶೋಧನೆಯಲ್ಲಿ ಜನಸಂಖ್ಯಾ ಸ್ತನ ಕ್ಯಾನ್ಸರ್ ಸ್ಕ್ರೀನಿಂಗ್ ಪರಿಣಾಮಕಾರಿತ್ವದ ಬಗ್ಗೆ ಮಾಹಿತಿಯನ್ನು ನನ್ನಿಂದ ಪಡೆಯಲಾಗುವುದು ಎಂದು ತನಿಖೆದಾರರು ನನಗೆ ತಿಳಿಸಿರುತ್ತಾರೆ. ಈ ಸಂಶೋಧನೆಯು ಅಂಗನವಾಡಿ ಕೆಲಸಗಾರರ ಜಾಗೃತಿ ಮೂಡಿಸಲು ಹಾಗೂ ಅದನ್ನು ತಡೆಗಟ್ಟಲು ಉಪಯೋಗಿಸುವರೆಂದು ಭಾವಿಸಿರುತ್ತೇನೆ.

ಈ ಎಲ್ಲಾ ಮಾಹಿತಿಯು ಗೌಪ್ಯವಾಗಿಡಲಾಗುವುದು. ಈ ಮಾಹಿತಿಗಳನ್ನು ವೈದ್ಯಕೀಯ ಸಾಹಿತ್ಯದಲ್ಲಿ ಪ್ರಕಟಣೆಗೆ ಮತ್ತು ಬೋಧನಾ ಉದ್ದೇಶಕ್ಕಾಗಿ ಉಪಯೋಗಿಸಿದರೂ ಎಲ್ಲಿಯೂ ಸಹ ನನ್ನ ಹೆಸರನ್ನು ಉಪಯೋಗಿಸುವುದಿಲ್ಲ ಎಂದು ತಿಳಿದಿರುತ್ತದೆ. ಈ ಸಂಶೋಧನೆಯ ವಿವಿಧ ಅಂಶಗಳನ್ನು ಪ್ರಕಟಣೆ ಮತ್ತು ಕಾನ್ಫರೆನ್ಸ್‌ಗಳಲ್ಲಿ ವಿವರಿಸಲು ಛಾಯಾ ಚಿತ್ರಗಳ ಅಗತ್ಯವಿದೆ ಎಂದು ತನಿಖೆದಾರರು ನನಗೆ ತಿಳಿಸಿರುತ್ತಾರೆ.

ಈ ಸಂಶೋಧನೆಯ ಉದ್ದೇಶ, ಅಧ್ಯಯನ ವಿಧಾನ ಮತ್ತು ಸಂಭಾವನೀಯ ಅಪಾಯಗಳ ಬಗ್ಗೆ ತನಿಖೆದಾರರು ನನಗೆ ತಿಳಿಸಿರುತ್ತಾರೆ ಎಂದು ಖಚಿತಪಡಿಸುತ್ತೇನೆ. ಈ ಸಮ್ಮತಿ ಪತ್ರವನ್ನು ಓದಿ ಅರ್ಥಮಾಡಿಕೊಂಡಿರುವ ನಾನು ಸ್ವಇಚ್ಛೆಯಿಂದ ಈ ಸಂಶೋಧನೆಯಲ್ಲಿ ಭಾಗವಹಿಸಲು ಸಮ್ಮತಿಯನ್ನು ನೀಡಿರುತ್ತೇನೆ.

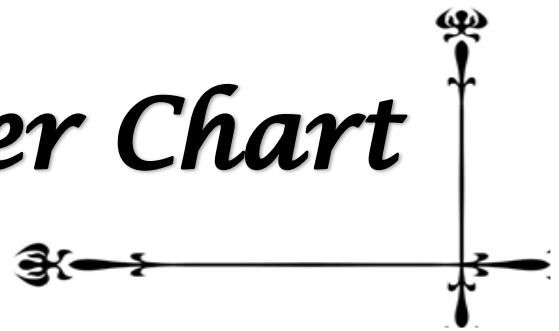
ಹೆಸರು:

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ಸ್ಥಳ:

ದಿನಾಂಕ:

Master Chart



Sl.No	GROUP	AGE	EDUCATION	CASTE	INCOME	MARS	RELIGION	OCCUP	DIST	OUTCOME
1	Interventi	32	High schoo	Sc	3	Married	Hindu	Anganwadi	10	Yes
2	Interventi	34	High schoo	Sc	3	Married	Hindu	Anganwadi	11	Yes
3	Interventi	38	Degree	Gm	2	Married	Hindu	Anganwadi	9	Yes
4	Interventi	47	High schoo	Sc	3	Married	Hindu	Anganwadi	6	Yes
5	Interventi	42	High schoo	OBC	3	Married	Hindu	Anganwadi	12	Yes
6	Interventi	45	High schoo	Sc	3	Married	Hindu	Anganwadi	11	Yes
7	Interventi	32	PUC	Sc	3	Married	Hindu	Anganwadi	10	Yes
8	Interventi	31	PUC	Sc	3	Married	Hindu	Anganwadi	15	Yes
9	Interventi	36	High schoo	Sc	3	Married	Hindu	Anganwadi	10	Yes
10	Interventi	47	PUC	Sc	3	Married	Hindu	Anganwadi	8	Yes
11	Interventi	36	PUC	Gm	3	Married	Hindu	Anganwadi	5	Yes
12	Interventi	40	High schoo	Sc	3	Married	Hindu	Anganwadi	4	Yes
13	Interventi	48	High schoo	Gm	3	Married	Hindu	Anganwadi	11	Yes
14	Interventi	52	PUC	Sc	2	Married	Hindu	Anganwadi	15	Yes
15	Interventi	43	PUC	Sc	3	Married	Hindu	Anganwadi	13	Yes
17	Interventi	35	High schoo	St	3	Married	Hindu	Anganwadi	14	Yes
18	Interventi	35	High schoo	Gm	3	Married	Hindu	Anganwadi	18	Yes
19	Interventi	50	High schoo	Sc	3	Married	Hindu	Anganwadi	19	Yes
20	Interventi	34	High schoo	OBC	3	Married	Muslim	Anganwadi	20	Yes
21	Interventi	50	High schoo	Sc	3	Married	Hindu	Anganwadi	21	Yes
22	Interventi	60	Primary sc	St	4	Married	Hindu	Helpers	14	Yes
23	Interventi	40	Illterate	Sc	3	Married	Hindu	Helpers	15	Yes
24	Interventi	45	High schoo	St	3	Married	Hindu	Helpers	11	Yes
25	Interventi	45	Illterate	Sc	3	Widow	Hindu	Helpers	10	Yes
26	Interventi	40	Primary sc	St	3	Married	Hindu	Helpers	11	Yes
27	Interventi	30	High schoo	Sc	3	Married	Hindu	Helpers	13	Yes
28	Interventi	43	Primary sc	Sc	3	Married	Hindu	Helpers	15	Yes
29	Interventi	45	Primary sc	St	3	Married	Hindu	Helpers	16	Yes
30	Interventi	30	Primary sc	St	3	Married	Hindu	Helpers	14	Yes
31	Interventi	34	PUC	Sc	3	Married	Hindu	Helpers	10	Yes
32	Interventi	32	Primary sc	St	3	Married	Hindu	Helpers	9	Yes
33	Interventi	34	Middle sch	Sc	3	Married	Hindu	Helpers	8	Yes
34	Interventi	38	High schoo	Sc	3	Unmarried	Hindu	Helpers	7	Yes
35	Interventi	46	PUC	Sc	3	Widow	Hindu	Helpers	5	Yes
36	Interventi	36	PUC	St	3	Married	Hindu	Helpers	10	Yes
37	Interventi	60	Illterate	St	3	Widow	Muslim	Helpers	12	Yes
38	Interventi	49	High schoo	Sc	3	Married	Hindu	Helpers	18	Yes
39	Interventi	48	High schoo	St	3	Married	Hindu	Helpers	12	Yes
40	Interventi	38	Illterate	Sc	3	Widow	Hindu	Helpers	11	Yes
41	Interventi	50	High schoo	St	3	Married	Hindu	Helpers	13	Yes
42	Interventi	35	High schoo	St	4	Married	Hindu	Helpers	6	Yes
43	Interventi	42	PUC	Sc	4	Married	Hindu	Helpers	15	Yes
44	Interventi	32	PUC	Gm	3	Married	Hindu	Anganwadi	10	Yes
45	Interventi	48	Primary sc	Sc	3	Widow	Hindu	Anganwadi	12	Yes
46	Interventi	50	Graduate	Sc	4	Married	Hindu	Anganwadi	11	Yes
47	Interventi	37	PUC	Sc	3	Married	Hindu	Anganwadi	3	Yes
48	Interventi	48	High schoo	St	3	Married	Hindu	Anganwadi	8	Yes
49	Interventi	42	PUC	Sc	4	Married	Hindu	Anganwadi	9	Yes

50	Interventi	42	PUC	Gm	3	Married	Hindu	Anganwadi	11	Yes
51	Interventi	47	PUC	Sc	3	Married	Hindu	Anganwadi	14	Yes
52	Interventi	51	High schoo	St	3	Married	Hindu	Anganwadi	15	Yes
53	Interventi	35	PUC	St	4	Married	Hindu	Anganwadi	10	Yes
54	Interventi	33	High schoo	St	3	Married	Hindu	Anganwadi	11	Yes
55	Interventi	48	High schoo	Sc	3	Married	Hindu	Anganwadi	4	Yes
56	Interventi	44	High schoo	Gm	3	Married	Hindu	Anganwadi	6	Yes
57	Interventi	44	High schoo	Gm	3	Married	Hindu	Anganwadi	10	Yes
58	Interventi	35	High schoo	Gm	3	Married	Hindu	Anganwadi	4	Yes
59	Interventi	50	High schoo	Gm	3	Married	Hindu	Anganwadi	12	Yes
60	Interventi	50	High schoo	Gm	3	Married	Hindu	Anganwadi	17	Yes
61	Interventi	46	Illterate	Gm	3	Married	Hindu	Anganwadi	19	Yes
62	Interventi	35	High schoo	Gm	3	Married	Hindu	Anganwadi	20	Yes
63	Interventi	50	PUC	Gm	3	Married	Hindu	Anganwadi	24	Yes
64	Interventi	48	PUC	Gm	4	Married	Hindu	Anganwadi	21	Yes
65	Interventi	37	High schoo	Gm	3	Married	Hindu	Anganwadi	15	Yes
66	Interventi	36	Degree	Gm	4	Married	Hindu	Anganwadi	14	Yes
67	Interventi	48	PUC	Gm	1	Married	Hindu	Anganwadi	13	Yes
68	Interventi	47	High schoo	Gm	3	Married	Hindu	Anganwadi	8	Yes
69	Interventi	53	PUC	Gm	1	Married	Hindu	Anganwadi	14	Yes
70	Interventi	34	High schoo	Gm	4	Married	Hindu	Anganwadi	6	Yes
71	Interventi	55	High schoo	Gm	3	Married	Hindu	Anganwadi	5	Yes
72	Interventi	55	PUC	Gm	4	Married	Hindu	Anganwadi	10	Yes
74	Interventi	45	High schoo	St	3	Married	Hindu	Helpers	11	Yes
75	Interventi	45	Primary sc	Gm	3	Married	Hindu	Helpers	12	Yes
76	Interventi	36	Primary sc	Gm	3	Married	Hindu	Helpers	14	Yes
77	Interventi	46	Primary sc	Gm	3	Married	Hindu	Helpers	10	Yes
78	Interventi	35	High schoo	Gm	4	Married	Hindu	Helpers	11	Yes
79	Interventi	42	Primary sc	Gm	3	Widow	Hindu	Helpers	10	Yes
80	Interventi	32	Middle sch	Gm	4	Married	Hindu	Helpers	14	Yes
81	Interventi	55	Illterate	Gm	3	Unmarried	Hindu	Helpers	15	Yes
82	Interventi	48	Middle sch	Gm	4	Married	Hindu	Helpers	12	Yes
83	Interventi	53	PUC	Gm	4	Married	Hindu	Anganwadi	18	Yes
84	Interventi	58	High schoo	OBC	4	Married	Hindu	Anganwadi	20	Yes
85	Interventi	59	Primary sc	Gm	4	Married	Hindu	Anganwadi	21	Yes
86	Interventi	42	High schoo	OBC	4	Married	Hindu	Anganwadi	22	Yes
87	Interventi	48	High schoo	Gm	4	Married	Hindu	Anganwadi	14	Yes
88	Interventi	47	Middle sch	Sc	3	Widow	Hindu	Helpers	10	Yes
89	Interventi	35	High schoo	Gm	3	Married	Hindu	Anganwadi	11	Yes
90	Interventi	42	PUC	Gm	3	Married	Hindu	Anganwadi	15	Yes
91	Interventi	60	High schoo	Sc	3	Widow	Hindu	Anganwadi	14	Yes
92	Interventi	44	Illterate	Sc	3	Separated	Hindu	Helpers	19	Yes
93	Interventi	55	Primary sc	Sc	3	Widow	Hindu	Helpers	2	Yes
94	Interventi	34	Primary sc	Sc	3	Married	Muslim	Helpers	2	Yes
95	Interventi	33	Illterate	Sc	4	Widow	Hindu	Helpers	4	Yes
96	Interventi	47	Primary sc	Sc	4	Widow	Hindu	Helpers	6	Yes
97	Interventi	31	High schoo	Sc	3	Married	Hindu	Helpers	8	Yes
98	Interventi	34	Primary sc	Sc	3	Married	Hindu	Helpers	10	Yes
99	Interventi	35	Primary sc	Sc	3	Married	Hindu	Helpers	12	Yes

100	Interventi	55	Illterate	Gm	4	Married	Hindu	Helpers	14	Yes
101	Interventi	40	Primary sc	Sc	3	Widow	Hindu	Helpers	15	Yes
102	Interventi	36	Primary sc	Sc	3	Married	Hindu	Helpers	13	Yes
103	Interventi	50	Primary sc	Sc	1	Married	Hindu	Helpers	14	Yes
104	Interventi	34	PUC	Gm	4	Married	Hindu	Anganwadi	10	Yes
105	Interventi	42	High schoo	Gm	4	Married	Hindu	Anganwadi	14	Yes
106	Interventi	58	High schoo	Sc	4	Married	Hindu	Anganwadi	12	Yes
107	Interventi	46	High schoo	Gm	4	Married	Hindu	Anganwadi	13	Yes
108	Interventi	43	Middle sch	Gm	4	Married	Hindu	Anganwadi	11	Yes
109	Interventi	47	High schoo	Sc	4	Married	Hindu	Anganwadi	10	Yes
110	Interventi	31	High schoo	Gm	4	Married	Hindu	Anganwadi	7	Yes
111	Interventi	35	High schoo	Sc	3	Married	Hindu	Anganwadi	8	Yes
112	Interventi	53	High schoo	St	4	Married	Hindu	Anganwadi	11	Yes
113	Interventi	44	High schoo	Gm	4	Married	Hindu	Anganwadi	12	Yes
114	Interventi	30	High schoo	Gm	4	Married	Hindu	Anganwadi	14	Yes
115	Interventi	32	High schoo	St	3	Married	Hindu	Anganwadi	15	Yes
116	Interventi	52	High schoo	Sc	3	Married	Hindu	Anganwadi	11	Yes
117	Interventi	36	High schoo	St	4	Married	Hindu	Anganwadi	10	Yes
118	Interventi	58	High schoo	Sc	4	Married	Hindu	Anganwadi	10	Yes
119	Interventi	30	High schoo	St	4	Married	Hindu	Anganwadi	15	Yes
120	Interventi	45	Middle sch	Sc	4	Married	Hindu	Anganwadi	12	Yes
121	Interventi	35	Degree	Sc	4	Married	Hindu	Anganwadi	9	Yes
122	Interventi	34	High schoo	St	3	Married	Hindu	Anganwadi	4	Yes
123	Interventi	55	High schoo	St	4	Married	Hindu	Anganwadi	6	Yes
124	Interventi	36	High schoo	St	4	Married	Hindu	Anganwadi	10	Yes
125	Interventi	30	High schoo	St	4	Married	Muslim	Anganwadi	12	Yes
126	Interventi	48	High schoo	OBC	4	Married	Muslim	Anganwadi	17	Yes
127	Interventi	39	High schoo	St	4	Married	Hindu	Anganwadi	19	Yes
128	Interventi	40	High schoo	St	3	Married	Hindu	Anganwadi	20	Yes
129	Interventi	30	High schoo	Sc	4	Married	Hindu	Anganwadi	24	Yes
130	Interventi	39	PUC	Sc	4	Married	Hindu	Anganwadi	23	Yes
131	Interventi	43	High schoo	Gm	4	Married	Hindu	Anganwadi	2	Yes
132	Interventi	44	PUC	Sc	4	Married	Hindu	Anganwadi	5	Yes
133	Interventi	59	Degree	Gm	4	Married	Hindu	Anganwadi	10	Yes
134	Interventi	46	High schoo	Sc	4	Married	Hindu	Anganwadi	6	Yes
135	Interventi	36	PUC	Gm	3	Married	Hindu	Anganwadi	8	Yes
136	Interventi	36	High schoo	St	3	Married	Hindu	Anganwadi	9	Yes
137	Interventi	32	PUC	Gm	3	Married	Hindu	Anganwadi	10	Yes
138	Interventi	45	High schoo	Gm	3	Married	Hindu	Anganwadi	11	Yes
139	Control	55	High schoo	Sc	3	Married	Hindu	Anganwadi	15	Yes
140	Control	45	PUC	Sc	4	Married	Hindu	Anganwadi	14	Yes
141	Control	47	Degree	Sc	4	Unmarried	Others	Anganwadi	11	Yes
142	Control	59	High schoo	Sc	3	Married	Hindu	Anganwadi	14	Yes
143	Control	30	PUC	Gm	3	Married	Hindu	Anganwadi	10	Yes
144	Control	40	PUC	St	4	Married	Hindu	Anganwadi	6	Yes
145	Control	52	High schoo	Gm	3	Married	Hindu	Anganwadi	8	Yes
146	Control	57	PUC	Gm	3	Married	Hindu	Anganwadi	9	Yes
147	Control	32	PUC	Gm	4	Married	Hindu	Anganwadi	10	Yes
148	Control	56	High schoo	Sc	3	Widow	Hindu	Anganwadi	14	Yes

149	Control	55	Middle sch	Gm	3	Widow	Hindu	Anganwadi	12	Yes
150	Control	52	Middle sch	Sc	3	Married	Hindu	Anganwadi	15	Yes
151	Control	30	PUC	Gm	3	Married	Hindu	Anganwadi	12	Yes
152	Control	52	High schoo	Sc	3	Married	Hindu	Anganwadi	14	Yes
153	Control	40	High schoo	Gm	3	Married	Hindu	Anganwadi	12	Yes
154	Control	41	High schoo	Gm	3	Married	Hindu	Anganwadi	15	Yes
155	Control	50	High schoo	Gm	3	Married	Hindu	Anganwadi	5	Yes
156	Control	55	High schoo	Gm	3	Married	Hindu	Anganwadi	8	Yes
157	Control	45	High schoo	Gm	3	Married	Hindu	Anganwadi	13	Yes
158	Control	52	High schoo	Gm	3	Married	Hindu	Anganwadi	14	Yes
159	Control	59	High schoo	Sc	4	Widow	Hindu	Anganwadi	18	Yes
160	Control	43	PUC	Gm	3	Married	Hindu	Anganwadi	19	Yes
161	Control	47	High schoo	Gm	3	Married	Hindu	Anganwadi	20	Yes
162	Control	31	High schoo	St	4	Married	Hindu	Anganwadi	21	Yes
163	Control	58	Middle sch	Sc	4	Married	Hindu	Anganwadi	14	Yes
164	Control	45	PUC	Gm	3	Married	Hindu	Anganwadi	15	Yes
165	Control	52	High schoo	Gm	3	Married	Hindu	Anganwadi	11	Yes
166	Control	33	High schoo	Gm	3	Married	Hindu	Anganwadi	10	Yes
167	Control	55	PUC	Gm	3	Married	Hindu	Anganwadi	11	Yes
168	Control	36	PUC	Gm	1	Married	Hindu	Anganwadi	13	Yes
169	Control	51	High schoo	Gm	3	Married	Hindu	Anganwadi	15	Yes
170	Control	31	High schoo	Gm	4	Married	Hindu	Anganwadi	16	Yes
171	Control	53	High schoo	Gm	3	Married	Hindu	Anganwadi	14	Yes
172	Control	41	High schoo	Gm	3	Married	Hindu	Anganwadi	10	Yes
173	Control	39	High schoo	Gm	3	Married	Hindu	Anganwadi	9	Yes
174	Control	52	High schoo	Gm	3	Married	Hindu	Anganwadi	8	Yes
175	Control	56	Primary sc	Sc	3	Married	Hindu	Anganwadi	17	Yes
176	Control	35	Degree	Sc	3	Married	Hindu	Anganwadi	19	Yes
177	Control	57	High schoo	Gm	3	Married	Hindu	Anganwadi	20	Yes
178	Control	36	Primary sc	Sc	4	Married	Hindu	Anganwadi	24	Yes
179	Control	56	High schoo	Gm	3	Married	Hindu	Anganwadi	23	Yes
180	Control	42	High schoo	Gm	3	Married	Hindu	Anganwadi	2	Yes
181	Control	47	High schoo	Sc	3	Widow	Hindu	Anganwadi	5	Yes
182	Control	39	PUC	Sc	3	Married	Hindu	Anganwadi	10	Yes
183	Control	33	PUC	Sc	3	Married	Hindu	Helpers	6	Yes
184	Control	56	Illterate	Gm	3	Married	Hindu	Helpers	8	Yes
185	Control	32	Middle sch	Sc	3	Married	Hindu	Helpers	9	Yes
186	Control	32	High schoo	St	3	Married	Hindu	Helpers	10	Yes
187	Control	55	High schoo	St	4	Married	Hindu	Helpers	11	Yes
188	Control	55	Middle sch	St	3	Married	Hindu	Helpers	15	Yes
189	Control	36	Primary sc	St	3	Married	Hindu	Helpers	14	Yes
190	Control	55	Middle sch	St	3	Married	Hindu	Helpers	11	Yes
191	Control	60	Illterate	St	3	Widow	Hindu	Helpers	14	Yes
192	Control	52	Illterate	St	3	Married	Hindu	Helpers	10	Yes
193	Control	47	Illterate	St	1	Married	Hindu	Helpers	6	Yes
194	Control	40	Middle sch	Sc	3	Married	Hindu	Helpers	8	Yes
195	Control	37	Illterate	Sc	3	Married	Hindu	Helpers	9	Yes
196	Control	52	Primary sc	St	3	Married	Hindu	Helpers	10	Yes
197	Control	53	High schoo	Gm	3	Married	Hindu	Helpers	4	Yes

198	Control	45	PUC	St	3	Married	Hindu	Helpers	6	Yes
199	Control	32	Illterate	St	3	Married	Hindu	Helpers	10	Yes
200	Control	36	Illterate	St	3	Married	Hindu	Helpers	12	Yes
201	Control	35	Primary sc	St	3	Married	Hindu	Helpers	17	Yes
202	Control	55	Illterate	St	3	Married	Hindu	Helpers	19	Yes
203	Control	56	Primary sc	St	3	Widow	Hindu	Helpers	20	Yes
204	Control	38	Middle sch	St	3	Married	Hindu	Helpers	24	Yes
205	Control	36	Illterate	St	3	Married	Hindu	Anganwadi	23	Yes
206	Control	36	Primary sc	St	3	Married	Hindu	Anganwadi	2	Yes
207	Control	47	Illterate	St	3	Married	Hindu	Anganwadi	5	Yes
208	Control	38	Primary sc	St	3	Married	Hindu	Anganwadi	10	Yes
209	Control	48	Primary sc	Gm	1	Married	Hindu	Anganwadi	6	Yes
210	Control	50	Primary sc	St	3	Married	Hindu	Anganwadi	8	Yes
211	Control	35	Middle sch	Gm	3	Married	Hindu	Anganwadi	9	Yes
212	Control	47	Middle sch	St	3	Married	Hindu	Anganwadi	10	Yes
213	Control	60	Middle sch	Gm	3	Married	Hindu	Anganwadi	2	Yes
214	Control	39	High schoo	St	3	Married	Hindu	Anganwadi	5	Yes
215	Control	48	Primary sc	St	3	Married	Hindu	Anganwadi	17	Yes
216	Control	52	Primary sc	St	3	Married	Hindu	Anganwadi	19	Yes
217	Control	57	Middle sch	St	3	Married	Hindu	Helpers	20	Yes
218	Control	42	Middle sch	St	3	Married	Hindu	Helpers	24	Yes
219	Control	54	Middle sch	St	3	Married	Hindu	Helpers	23	Yes
220	Control	45	Middle sch	Sc	3	Married	Hindu	Helpers	2	Yes
221	Control	36	Middle sch	St	1	Married	Hindu	Helpers	5	Yes
222	Control	34	Primary sc	St	4	Married	Hindu	Helpers	10	Yes
223	Control	48	Middle sch	Gm	3	Married	Hindu	Helpers	6	Yes
224	Control	48	Primary sc	St	3	Married	Hindu	Helpers	8	Yes
225	Control	55	Illterate	St	3	Married	Hindu	Helpers	9	Yes
226	Control	58	Middle sch	St	1	Married	Hindu	Helpers	10	Yes
227	Control	36	Middle sch	Sc	4	Married	Hindu	Helpers	11	Yes
228	Control	45	High schoo	Gm	3	Married	Hindu	Helpers	15	Yes
229	Control	32	Primary sc	Gm	2	Married	Hindu	Helpers	14	Yes
230	Control	45	Illterate	St	3	Married	Hindu	Helpers	11	Yes
231	Control	39	Middle sch	St	2	Married	Hindu	Helpers	14	Yes
232	Control	56	Middle sch	St	3	Widow	Hindu	Helpers	10	Yes
233	Control	57	Primary sc	St	2	Married	Hindu	Helpers	6	Yes
234	Control	34	Middle sch	St	3	Married	Hindu	Helpers	8	Yes
235	Control	58	Primary sc	St	3	Widow	Hindu	Helpers	9	Yes
236	Control	31	High schoo	Gm	3	Married	Hindu	Helpers	10	Yes
237	Control	55	Primary sc	St	3	Married	Hindu	Helpers	10	Yes
238	Control	36	High schoo	St	3	Married	Hindu	Helpers	18	Yes
239	Control	48	Middle sch	St	3	Married	Hindu	Helpers	19	Yes
240	Control	56	Middle sch	St	3	Married	Hindu	Helpers	20	Yes
241	Interventi	45	High schoo	OBC	3	Married	Muslim	Anganwadi	10	No
242	Interventi	36	Middle sch	St	3	Married	Hindu	Anganwadi	15	No
243	Interventi	36	Middle sch	St	2	Married	Hindu	Anganwadi	12	No
244	Interventi	32	High schoo	OBC	4	Married	Hindu	Anganwadi	13	No
245	Interventi	48	Middle sch	Sc	3	Married	Hindu	Anganwadi	14	No
246	Interventi	45	Primary sc	Gm	4	Married	Hindu	Anganwadi	8	No

247	Interventi	55	High schoo	St	3	Married	Hindu	Anganwadi	2	No
248	Interventi	56	Middle sch	St	4	Married	Hindu	Anganwadi	5	No
249	Interventi	36	High schoo	Gm	2	Married	Hindu	Anganwadi	4	No
250	Interventi	47	Middle sch	Sc	3	Married	Hindu	Anganwadi	12	No
251	Interventi	48	Middle sch	St	3	Married	Hindu	Anganwadi	15	No
252	Interventi	49	Middle sch	Gm	2	Married	Hindu	Anganwadi	12	No
253	Interventi	50	Middle sch	Sc	4	Married	Hindu	Anganwadi	14	No
254	Interventi	51	High schoo	St	2	Married	Hindu	Anganwadi	12	No
255	Interventi	36	Primary sc	Sc	2	Married	Hindu	Helpers	14	No
256	Interventi	45	Illterate	St	3	Married	Hindu	Helpers	15	No
257	Interventi	48	Middle sch	Sc	4	Married	Hindu	Helpers	10	No
258	Interventi	47	Primary sc	St	4	Married	Hindu	Helpers	21	No
259	Interventi	48	Primary sc	St	3	Married	Hindu	Helpers	13	No
260	Interventi	49	Middle sch	St	3	Married	Hindu	Helpers	11	No
261	Interventi	56	Primary sc	St	3	Married	Hindu	Helpers	19	No
262	Interventi	52	Middle sch	Sc	3	Married	Hindu	Helpers	20	No
263	Interventi	51	Illterate	St	3	Married	Hindu	Helpers	15	No
264	Interventi	58	Illterate	Sc	4	Married	Hindu	Helpers	10	No
265	Interventi	35	Illterate	Sc	3	Married	Hindu	Helpers	11	No
266	Interventi	52	Primary sc	Sc	3	Married	Hindu	Helpers	15	No
267	Interventi	58	Primary sc	Sc	3	Married	Christan	Helpers	10	No
268	Interventi	56	Primary sc	St	3	Married	Christan	Helpers	16	No
269	Interventi	32	Primary sc	St	4	Married	Hindu	Helpers	7	No
270	Interventi	31	Primary sc	Sc	3	Married	Hindu	Helpers	9	No
271	Interventi	39	Primary sc	St	4	Married	Hindu	Helpers	14	No
272	Interventi	59	Primary sc	Sc	3	Married	Hindu	Helpers	12	No
273	Interventi	57	Primary sc	St	3	Married	Hindu	Helpers	10	No
274	Interventi	36	Middle sch	Sc	4	Married	Hindu	Helpers	10	No
275	Interventi	36	Middle sch	St	2	Married	Hindu	Helpers	11	No
276	Interventi	36	Primary sc	Sc	2	Married	Hindu	Helpers	12	No
277	Interventi	41	Primary sc	Sc	3	Married	Hindu	Helpers	12	No
278	Interventi	42	Primary sc	Sc	3	Married	Hindu	Helpers	15	No
279	Interventi	58	Middle sch	Sc	3	Widow	Hindu	Helpers	14	No
280	Interventi	56	Primary sc	Sc	2	Married	Hindu	Helpers	14	No
281	Interventi	32	Middle sch	Sc	2	Married	Hindu	Helpers	12	No
282	Interventi	38	Primary sc	Sc	3	Married	Hindu	Helpers	10	No
283	Interventi	36	Middle sch	Sc	3	Married	Hindu	Helpers	18	No
284	Interventi	55	Primary sc	St	3	Married	Hindu	Helpers	11	No
285	Interventi	58	Middle sch	St	3	Married	Hindu	Helpers	12	No
286	Interventi	56	Middle sch	St	3	Widow	Hindu	Helpers	10	No
287	Interventi	54	Primary sc	St	3	Married	Hindu	Helpers	11	No
288	Interventi	58	Illterate	St	2	Married	Hindu	Helpers	14	No
289	Interventi	54	Illterate	St	2	Married	Hindu	Helpers	15	No
290	Interventi	58	Illterate	St	3	Married	Hindu	Helpers	12	No
291	Control	45	High schoo	Sc	3	Married	Hindu	Anganwadi	2	No
292	Control	58	PUC	Sc	3	Married	Hindu	Anganwadi	4	No
293	Control	32	High schoo	Sc	3	Married	Hindu	Anganwadi	4	No
294	Control	58	Middle sch	Sc	3	Married	Hindu	Anganwadi	4	No
295	Control	57	High schoo	Sc	3	Married	Hindu	Anganwadi	5	No

296	Control	54	Degree	Sc	2	Married	Hindu	Anganwadi	5	No
297	Control	32	High schoo	Sc	2	Married	Hindu	Anganwadi	5	No
298	Control	55	PUC	Sc	2	Married	Hindu	Anganwadi	6	No
299	Control	32	High schoo	Sc	2	Married	Hindu	Anganwadi	7	No
300	Control	30	High schoo	Sc	2	Married	Hindu	Anganwadi	7	No
301	Control	31	High schoo	Sc	2	Married	Hindu	Anganwadi	8	No
302	Control	48	High schoo	Sc	3	Married	Hindu	Anganwadi	8	No
303	Control	42	PUC	Sc	3	Married	Hindu	Anganwadi	9	No
304	Control	43	PUC	Sc	3	Married	Hindu	Anganwadi	9	No
305	Control	31	PUC	Sc	3	Married	Hindu	Anganwadi	9	No
306	Control	53	PUC	St	3	Married	Hindu	Anganwadi	9	No
307	Control	32	PUC	St	2	Married	Hindu	Anganwadi	10	No
308	Control	45	High schoo	St	2	Married	Hindu	Anganwadi	10	No
309	Control	56	PUC	St	2	Married	Hindu	Anganwadi	10	No
310	Control	50	High schoo	St	2	Married	Hindu	Anganwadi	10	No
311	Control	40	High schoo	St	2	Married	Hindu	Anganwadi	10	No
312	Control	51	Degree	St	2	Married	Hindu	Anganwadi	10	No
313	Control	59	High schoo	St	3	Married	Hindu	Anganwadi	10	No
314	Control	60	Illterate	St	3	Married	Hindu	Helpers	10	No
315	Control	52	Primary sc	St	1	Married	Hindu	Helpers	10	No
316	Control	30	Middle sch	St	1	Married	Hindu	Helpers	10	No
317	Control	38	Primary sc	St	1	Married	Hindu	Helpers	10	No
318	Control	32	Middle sch	St	1	Married	Hindu	Helpers	10	No
319	Control	41	High schoo	St	1	Married	Hindu	Helpers	10	No
320	Control	32	Primary sc	St	3	Married	Hindu	Anganwadi	10	No
321	Control	55	Middle sch	St	3	Married	Hindu	Anganwadi	10	No
322	Control	46	Primary sc	St	3	Married	Hindu	Anganwadi	10	No
323	Control	58	Middle sch	St	3	Married	Hindu	Anganwadi	10	No
324	Control	59	Primary sc	St	3	Married	Hindu	Anganwadi	11	No
325	Control	32	Middle sch	St	4	Married	Hindu	Anganwadi	11	No
326	Control	37	Middle sch	Sc	4	Married	Hindu	Anganwadi	11	No
327	Control	55	Middle sch	Sc	4	Married	Hindu	Anganwadi	11	No
328	Control	56	Primary sc	Sc	4	Married	Hindu	Anganwadi	11	No
329	Control	32	Primary sc	Sc	4	Married	Hindu	Anganwadi	11	No
330	Control	48	Middle sch	Sc	4	Married	Hindu	Anganwadi	12	No
331	Control	30	Primary sc	Sc	3	Married	Hindu	Helpers	12	No
332	Control	30	Primary sc	Sc	3	Married	Hindu	Helpers	12	No
333	Control	36	Middle sch	Sc	3	Married	Hindu	Helpers	12	No
334	Control	30	Primary sc	Sc	3	Married	Hindu	Helpers	12	No
335	Control	35	Middle sch	Sc	3	Married	Hindu	Helpers	12	No
336	Control	55	High schoo	Sc	3	Married	Hindu	Helpers	12	No
337	Control	56	Middle sch	Sc	3	Married	Hindu	Helpers	12	No
338	Control	45	Primary sc	Sc	2	Married	Hindu	Helpers	12	No
339	Control	58	Middle sch	Sc	2	Married	Hindu	Helpers	12	No
340	Control	56	Primary sc	Sc	2	Married	Hindu	Anganwadi	12	No
341	Control	54	Illterate	Sc	2	Married	Hindu	Anganwadi	12	No
342	Control	32	Primary sc	Sc	2	Married	Hindu	Anganwadi	12	No
343	Control	58	Middle sch	Sc	2	Married	Hindu	Anganwadi	12	No
344	Control	59	Primary sc	Sc	2	Married	Hindu	Helpers	13	No

345	Control	45	Middle sch	Sc	2	Married	Hindu	Helpers	13	No
346	Control	56	Primary sc	Sc	2	Married	Hindu	Anganwadi	13	No
347	Control	58	Middle sch	Sc	2	Married	Hindu	Anganwadi	13	No
348	Control	54	Primary sc	Sc	3	Married	Hindu	Anganwadi	14	No
349	Control	58	Middle sch	Sc	3	Married	Hindu	Anganwadi	14	No
350	Control	54	Primary sc	Sc	3	Married	Hindu	Helpers	14	No
351	Control	59	Primary sc	Sc	3	Married	Hindu	Helpers	14	No
352	Control	54	Primary sc	Sc	3	Married	Hindu	Helpers	14	No
353	Control	51	Primary sc	Sc	3	Married	Hindu	Helpers	14	No
354	Control	32	Primary sc	Sc	3	Married	Hindu	Helpers	14	No
355	Control	30	Middle sch	Sc	2	Married	Hindu	Helpers	14	No
356	Control	31	Middle sch	Sc	2	Married	Hindu	Helpers	14	No
357	Control	32	Middle sch	Sc	2	Married	Christan	Helpers	14	No
358	Control	32	Middle sch	Sc	2	Married	Hindu	Helpers	14	No
359	Control	35	Primary sc	Sc	2	Married	Hindu	Helpers	14	No
360	Control	32	Primary sc	Sc	2	Married	Hindu	Helpers	15	No
361	Control	30	Primary sc	Sc	2	Married	Hindu	Helpers	15	No
362	Control	39	Middle sch	Sc	3	Married	Hindu	Helpers	15	No
363	Control	56	Middle sch	Sc	3	Married	Hindu	Helpers	15	No
364	Control	55	Primary sc	Sc	3	Married	Hindu	Helpers	15	No
365	Control	60	Primary sc	Sc	1	Widow	Muslim	Helpers	15	No
366	Control	60	Middle sch	Sc	1	Married	Hindu	Helpers	15	No
367	Control	35	Primary sc	Sc	1	Married	Hindu	Helpers	15	No
368	Control	56	Middle sch	Sc	1	Married	Hindu	Helpers	15	No
369	Control	32	Primary sc	Sc	1	Married	Hindu	Helpers	16	No
370	Control	30	Primary sc	Sc	1	Married	Hindu	Helpers	17	No
371	Control	32	Middle sch	Sc	3	Married	Hindu	Helpers	18	No
372	Control	48	Middle sch	Sc	3	Married	Hindu	Helpers	18	No
373	Control	46	Primary sc	Sc	3	Married	Hindu	Helpers	19	No
374	Control	40	Middle sch	Sc	3	Married	Hindu	Helpers	19	No
375	Control	38	Primary sc	Sc	3	Married	Hindu	Helpers	19	No
376	Control	55	Middle sch	Sc	3	Widow	Hindu	Helpers	20	No
377	Control	45	Primary sc	Sc	3	Married	Hindu	Helpers	20	No
378	Control	47	Middle sch	Sc	3	Married	Hindu	Helpers	21	No