Knowledge, attitude, and practices toward tobacco control among rural community health care workers of primary subcenters in Belagavi district, Karnataka

Atrey J. Pai Khot, Anil V. Ankola, Roopali M. Sankeshwari, Abhra Roy Choudhury, Ram Surath Kumar K, Mehul A. Shah

Department of Public Health Dentistry, KAHER’s KLE Vishwanath Katti Institute of Dental Sciences, Nehru Nagar, Belagavi, Karnataka, India

Abstract

Context: Tobacco is the common cause to a number of illnesses affecting millions of individuals all over the world. Primary care physicians are the initial point of contact for tobacco users, yet reaching everyone is impossible. Therefore, it is important to understand community health workers attitude to render community services in tobacco cessation counseling. Aim: To assess knowledge, attitude, practices, and occupational barriers toward tobacco control among community health care workers in Belagavi district, Karnataka. Settings and Design: This cross-sectional study was conducted in various subcenters of Belagavi district, Karnataka. Methods and Material: Simple random sampling technique was employed and 220 participants were interviewed using an interviewer administered questionnaire comprising of 22 close ended questions. Reliability of the questionnaire assessed with Cronbach’s α value of 0.85, face validity 84%, and content validity ratio 0.78. Statistical Analysis Used: The data were analyzed using descriptive analysis, chi square analysis, correlation, and regression. Results: The mean knowledge score among Accredited Social Health Activist (ASHA) workers was 4.77 ± 2.11 and it was lower in Anganwadi workers 2.93 ± 2.55. There was a statistically significant difference in the attitude scores (P < 0.05) between the community health workers. The majority of the ASHA workers would spread awareness, on the other hand, Anganwadi workers did not take any specific step which showed statistically significant difference with a Pvalue of 0.018. Conclusion: ASHA workers had been superior to Anganwadi workers with regard to knowledge and attitude toward tobacco control. However, knowledge regarding tobacco and its ill effects was below optimal level among community health workers which desires to thoroughly educate in the aspects of oral health and disorders as part of their training.

Keywords: Anganwadi workers, ASHA workers, community health worker’s, tobacco control

Introduction

Tobacco has become an ever-growing global menace and has emerged as the leading cause of death throughout the world with 6 million deaths each year, of which 5 million are directly attributable to tobacco use.[1] The Global Adult Tobacco Survey (GATS-2) in 2017 reviews that tobacco is consumed by 28.6% of Indian population including 10.7% smoke form and 21.4% use smokeless tobacco.[2,3] The National Tobacco Control Programme was introduced by the Indian government with the goal of raising awareness about the ill effects of tobacco consumption, reducing tobacco production and consumption.
supply, and ensuring effective implementation of the provisions of “The Cigarettes and Other Tobacco Products Act, 2003.”

In addition, with the goal of assisting people in quitting smoking and facilitating the implementation of tobacco preventive and control policies proposed by the WHO framework convention on tobacco control. These diseases lead not only to ailments affecting disability adjusted life years but also to a significant economic and environmental burden on societies.

Primary care basic concept is to deliver medical care keeping patients and the community in mind. Traditionally, it is the initial point of interaction a person has with the health system; the point where people receive care for most of their everyday health needs. Primary care providers (PCPs) which includes physician and medical officers are in an ideal position to support tobacco cessation efforts as they represent the first point-of-care for the majority of tobacco users. Patients would appreciate the advice of these health care professionals and try to implement it in their lifestyle. It is distinctly evident that training physicians and dentists in tobacco cessation is not sufficient for a practice to reach the number of individuals necessary to produce a measurable change in tobacco cessation.

Tobacco cessation services can be augmented by integrated approach by mobilizing health care providers in the community. National Rural Health Mission proposed introduction of community health workers namely Accredited Social Health Activist (ASHA) in order to provide effective health care to the rural population. Similarly, Anganwadi workers are voluntary community serving frontline workers of the integrated child development services (ICDS) Programme. They play a central role in achieving national health and population policy goals by forming a bridge between the rural people and health service outlets. Thus, they are expected to educate community regarding the risk factors for NCDs like unhealthy diet, physical inactivity, and intake of tobacco.

Nationwide studies on ASHAs and Anganwadi workers impact on generating demand for health and mobilizing community to services have shown positive results. As a bridge between the community and health system ASHA and Anganwadi workers are in a distinctive place to raise awareness on tobacco-related issues. There is marked lacunae in literature about ASHA and Anganwadi workers collectively functioning toward tobacco control. This study investigates whether community health care personnel such as ASHAs and Anganwadi workers can be used to inform and educate the public about tobacco and its adverse effects. Therefore, objectives of this study are to assess knowledge, attitude, practices of community health workers toward tobacco control, and to compare knowledge, attitude, practices, and perceptions among ASHA workers versus Anganwadi workers toward tobacco control.

### Subject and Methods

This study implements an observational, cross-sectional study design and had been carried out in accordance with the STROBE guidelines to collect prevalent data about the knowledge, attitude, and practices toward tobacco control in Belagavi district, Karnataka. Ethical approval for this research was acquired from the institutional review board (Ref. No: 1414). The study was conducted in the month of April 2021. The purpose of the study was explained to the participants and written informed consent was obtained from them. Those present on the day of the study and willing to give informed consent were included in the study.

### Questionnaire validation

Pilot study conducted on small sample of 8 Medical Service Worker’s to detect any problem with design like ambiguity of words, inability to understand the questions, and other problems associated with questionnaire. Reliability of the questionnaire was assessed with the help of Cronbach’s α and was found to be 0.85 and validity of the questionnaire was assessed using face validity (84%) and content validity ratio (0.78). Based on the feedback from the pre-test, the questionnaire was further refined by additions and deletions to make it more appropriate and specific to the aim of the study and hence a valid questionnaire was designed.

### Sample size estimation and sampling technique

Sample size was calculated using the formula n = 4pq/d², based on responses observed in the pilot study (p = 65%) where, p = prevalence, q = 1-p, d = error (10% of p), the sample size was 215 rounding off to 220. The list of participants from all the subcenters obtained and they were selected based on simple random technique to actively participate in the study.

### Questionnaire details

The self-administered questionnaires comprising of 22 close ended questions in regional language out of which 12 were knowledge based, 7 attitude based, and 3 practices based were distributed to the participants at their work place. Participants were instructed to attempt all the questions within the time span of 15 min. The initial part of the questionnaire contained general socio-demographic details of the participant which was later utilized for qualitative analysis and later part covered various aspects of awareness about tobacco and its harmful effects.

### Statistical analysis

Collected data were entered in MS Excel and analyzed using IBM-SPSS® Statistics-Version 21 (USA: IBM Corp.). Descriptive statistics was applied for the frequency distribution and percentage of community health care workers. Chi-square test for the association between the study variables, knowledge, and attitude questions. Consecutively, Mann–Whitney U test was applied to test significance among both the category of workers and Kruskal–Wallis test applied to test significance among the other study variables. In addition, the correlation between the knowledge and attitude scores was evaluated by Spearman's rank correlation coefficient test whereas, their association with the demographic details of the health care professionals was analyzed by simple
linear regression and multivariate linear regression analysis. The statistical significance was set at \( P \leq 0.05 \) for all the tests.

**Results**

A total of 220 responses from community health care workers were obtained, out of which 105 (47.7%) were ASHA workers and 115 (52.3%) were Anganwadi workers. The sociodemographic characteristics of the respondents are depicted in [Table 1]. Chi square association between community health workers and various other factors are depicted in [Table 2].

**Knowledge about tobacco product and its consequences**

The community health workers were assessed for knowledge by 12 knowledge-based questions and categorizing them into high (>8 score), medium (>4 score), and low (<4 score). However, the majority of community health workers, 140 (63.64%), had a low knowledge score, whereas 70 (31.82%) had medium and 10 (4.54%) had high knowledge scores [Figure 1]. Kruskal–Wallis test depicted that there was significant difference \( (P < 0.05) \) in the knowledge scores between the community health workers with different age (<30, 30–40, 41–50, >50), different years of experience (<10 years, 10–15 years, 16–20 years, 21–25 years, and >25 years). Mann–Whitney U test showed that there was significant difference in the knowledge scores between the community health care workers \( (P \leq 0.001) \) [Table 3]. The mean overall knowledge score among community health care workers was 4.77 ± 2.11 in ASHA workers and lower in Anganwadi workers 2.93 ± 2.55. However, according to age wise distribution, ASHA workers had higher knowledge score in age group of 30 to 40 (4.88 ± 2.03) years and Anganwadi workers in age group of <30 (9.7 ± 2) years. Considering education qualification knowledge score was higher among highly qualified community health workers. Year of experience also had significant effect on knowledge of an individual. ASHA workers with experience of 10 to 15 years had higher knowledge score of 4.82 ± 2.07, whereas Anganwadi workers with less than 10 years’ experience had high knowledge score of 6.69 ± 2.21.

**Attitude toward tobacco control**

The attitude of community health workers was assessed by 7 attitude-based questions and categorizing into positive (>3 score) and negative (<4 score). The majority of the community health workers, 86% (189), had a positive attitude toward the tobacco control and, on the other hand, 14% (31) participants had a negative attitude [Figure 2]. There was a statistically significant difference in the attitude scores \( (P < 0.05) \) between the community health workers with different age (<30, 30–40, 41–50, >50), level of education (less than 10th STD, 10th STD, PUC, more than PUC), and different years of experience (<10 years, 10–15 years, 16–20 years, 21–25 years, and >25 years) when tested by the Kruskal–Wallis test. Mann–Whitney U test for the attitude scores between the ASHA and Anganwadi health care workers depicted that they were statistically significant with a \( P \) value of \( \leq 0.001 \) [Table 4]. The mean attitude score among the participants was 4.90 ± 1.26 with the highest in ASHA workers in age group of <30 years (5.33 ± 0.52), with higher qualification (6.33 ± 1.15) and with year of experience of 10 to 15 (5.23 ± 2.07) years, whereas in Anganwadi workers, attitude score is highest in age group <30 (5.60 ± 0.52) years, with higher educational qualification (7) and with year of experience of less than 10 years (6.19 ± 0.83).

**Table 1: Descriptive statistics from sociodemographic details**

| Characteristics | ASHA (n=105) (%) | Anganwadi (n=115) (%) |
|-----------------|-----------------|-----------------------|
| Age <30         | 6 (5.7%)        | 5 (4.3%)              |
| 30-40           | 52 (49.5%)      | 23 (20%)              |
| 41-50           | 45 (42.8%)      | 44 (38.3%)            |
| >50             | 2 (1.9%)        | 43 (37.4%)            |
| Average (mean)  | (40.05±5.37) years | (46.09±8.75) years   |
| Education Qualification |     |                      |
| Lower than 10th STD | 17 (16.2%) | 14 (12.2%)            |
| 10th STD        | 46 (43.8%)      | 65 (56.5%)            |
| PUC             | 39 (37.1%)      | 32 (27.8%)            |
| Higher than PUC | 3 (2.9%)        | 4 (3.5%)              |
| Years of Service |                |                      |
| <10             | 41 (39%)        | 16 (13.9%)            |
| 10-15           | 64 (61%)        | 12 (10.43%)           |
| 16-20           | 0               | 21 (18.3%)            |
| 21-25           | 0               | 53 (46.1%)            |
| >25             | 0               | 13 (11.3%)            |
| Average (mean)  | (9.05±2.68) years | (20.34±6.70) years   |

**Figure 1:** Knowledge score toward tobacco control among community healthcare workers

**Figure 2:** Attitude score toward tobacco control among community healthcare workers.
Table 2: Association between community health workers and other factors

(A) Based on knowledge of respondents

| Question                                                                 | Response                                                                 | ASHA workers | Anganwadi workers | P       |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------|-------------------|---------|
| Do you know about Nicotine being an addictive substance in tobacco?      | Non addictive                                                            | 4 (3.8%)     | 7 (6.1%)          | ≤0.001* |
|                                                                           | Addictive**                                                              | 75 (71.4%)   | 65 (56.5%)        |         |
|                                                                           | Don't know                                                               | 26 (24.8%)   | 43 (37.4%)        |         |
| What are the adverse health effects of tobacco consumption?              | Cancer                                                                   | 69 (65.7%)   | 65 (56.5%)        | 0.002*  |
|                                                                           | Cardiovascular diseases                                                  | 0            | 0                 |         |
|                                                                           | Respiratory diseases                                                     | 0            | 0                 |         |
|                                                                           | Effect on pregnancy and its outcomes                                     | 36 (34.3%)   | 13 (11.3%)        |         |
|                                                                           | All of the above**                                                       | 37 (32.2%)   |                   |         |
| Which is the most common age for initiation of tobacco use amongst people in India? | <12 years                                                                | 18 (17.1%)   | 24 (20.9%)        | ≤0.001* |
|                                                                           | 13-19 years**                                                            | 66 (62.9%)   | 43 (37.4%)        |         |
|                                                                           | >30 years                                                                | 20 (19.0%)   | 48 (41.7%)        |         |
| What is the most common reason for an individual to consume tobacco and its products? | Fashion and trends                                                       | 21 (20.0%)   | 25 (21.7%)        | 0.068*  |
|                                                                           | Mental/emotional stress                                                  | 37 (35.2%)   | 40 (34.8%)        |         |
|                                                                           | Peer Pressure**                                                          | 41 (39.0%)   | 32 (27.8%)        |         |
|                                                                           | Unknown                                                                  | 6 (5.7%)     | 18 (15.7%)        |         |
| Which are the forms of tobacco most prevalent that you are aware of?     | Beedis                                                                   | 23 (21.9%)   | 32 (27.8%)        | ≤0.001* |
|                                                                           | Cigarettes**                                                             | 35 (33.3%)   | 15 (13.0%)        |         |
|                                                                           | Paan with areca nut                                                     | 10 (9.5%)    | 23 (20.0%)        |         |
|                                                                           | Gutkha                                                                   | 37 (35.2%)   | 36 (31.3%)        |         |
|                                                                           | Others                                                                    | 0            | 9 (7.8%)          |         |
| Secondhand smoke is                                                       | Smoke that is breathed in by the smoker                                  | 28 (26.7%)   | 29 (25.2%)        | ≤0.001* |
|                                                                           | Pollution from smoke stacks and car exhaust                              | 0            | 4 (3.5%)          |         |
|                                                                           | Smoke from the burning end of a cigarette inhaled by nonsmoker**        | 15 (14.3%)   | 25 (21.7%)        |         |
|                                                                           | Active smoking                                                           | 8 (7.6%)     | 28 (24.3%)        |         |
|                                                                           | Don't know                                                               | 54 (51.4%)   | 29 (25.2%)        |         |
| The law prohibits the sale of tobacco products via vending machines and within 100 yards of… | Any educational institute**                                              | 59 (56.2%)   | 51 (44.3%)        | 0.080*  |
|                                                                           | Health centers                                                           | 33 (31.4%)   | 37 (32.2%)        |         |
|                                                                           | Cinema hall                                                              | 3 (2.9%)     | 12 (10.4%)        |         |
|                                                                           | Any place of worship                                                     | 10 (9.5%)    | 15 (13.0%)        |         |
| Which is the principle comprehensive law governing tobacco control in India? | Food and Drug Administration (FDA)                                       | 19 (18.1%)   | 44 (38.3%)        | ≤0.001* |
|                                                                           | Cigarettes and Other Tobacco Products Act (COTPA)**                      | 46 (43.8%)   | 26 (22.6%)        |         |
|                                                                           | Drugs and Cosmetic Act (DCA)                                             | 11 (10.5%)   | 5 (4.3%)          |         |
|                                                                           | National Tobacco Control Program (NTCP)                                   | 29 (27.6%)   | 40 (34.8%)        |         |
| Select the correct statement for E-Cigarettes                            | It is relatively safe tobacco substitute                                 | 4 (3.8%)     | 6 (5.2%)          |         |
|                                                                           | It does not contain nicotine                                             | 6 (5.7%)     | 11 (9.6%)         | 0.175*  |
|                                                                           | It is a battery-operated electronic device that works by heating a liquid into an aerosol that users inhale and exhale** | 4 (3.8%)     | 7 (6.1%)          |         |
|                                                                           | No age restriction for its consumption                                   | 4 (3.8%)     | 0                 |         |
|                                                                           | Don't know                                                               | 87 (82.9%)   | 91 (79.1%)        |         |
| What are the functions of National Tobacco Control Program (NTCP)?       | Monitoring of tobacco control laws                                       | 13 (12.4%)   | 8 (7.0%)          | ≤0.001* |
|                                                                           | Setting-up and strengthening of cessation facilities including provision of pharmacological treatment facilities at district level | 27 (25.7%)   | 21 (18.3%)        |         |
|                                                                           | Training and counseling of health and social workers                     | 14 (13.3%)   | 12 (10.4%)        |         |
|                                                                           | All of the above**                                                      | 38 (36.2%)   | 18 (15.7%)        |         |
|                                                                           | None of the above**                                                     | 3 (2.9%)     | 8 (7.0%)          |         |
|                                                                           | Don't know                                                               | 10 (9.5%)    | 48 (41.7%)        |         |
| Is it necessary to follow prescribed Nicotine Replacement Therapy (NRT) along with dosage instructions carefully to avoid over dosage? | Yes **                                                                   | 52 (49.5%)   | 22 (19.1%)        | ≤0.001* |
|                                                                           | No                                                                       | 22 (21.0%)   | 3 (2.6%)          |         |
|                                                                           | Over the counter can be given                                            | 3 (2.9%)     | 0                 |         |
|                                                                           | Don't know                                                               | 28 (26.7%)   | 90 (78.3%)        |         |

Contd...
### Table 2: Contd...

#### (A) Based on knowledge of respondents

| Question | Response | ASHA workers | Anganwadi workers | \( P \) |
|----------|----------|--------------|-------------------|--------|
| Which are the forms of NRT available? | | | | |
| | Patches | 22 (21.0%) | 6 (5.2%) | ≤0.001* |
| | Gums | 21 (20.0%) | 14 (12.2%) | |
| | Lozenges | 17 (16.2%) | 1 (0.9%) | |
| | Nasal spray | 1 (1.0%) | 0 | |
| | All of the above** | 7 (6.7%) | 0 | |
| | Don’t know | 37 (35.2%) | 94 (81.7%) | |

*Indicates Chi-Square test. **Indicates correct answer

#### (B) Based on attitude of respondents

| Question | Response | ASHA workers | Anganwadi workers | \( P \) |
|----------|----------|--------------|-------------------|--------|
| Do you think that celebrities have an influence on individual’s mindset who try to impersonate them? | Yes | 85 (81.0%) | 69 (60.0%) | 0.002* |
| | No | 20 (19.0%) | 46 (40.0%) | |
| Do you believe that statutory warnings on cigarette packets should be made conspicuous? | Yes | 95 (90.5%) | 104 (90.4%) | 0.974* |
| | No | 10 (9.6%) | 11 (9.5%) | |
| Do you consider tobacco cessation counseling part of your professional job? | Yes | 94 (89.5%) | 86 (74.8%) | 0.005* |
| | No | 11 (10.5%) | 29 (25.2%) | |
| Do you think government should impose ban on advertisements as well as sale of tobacco products? | Yes | 92 (87.6%) | 113 (98.3%) | 0.011* |
| | No | 13 (12.4%) | 2 (1.7%) | |
| What do you think is the most reliable and effective source for providing information and spreading awareness? | Individual approach by way of one-to-one interaction | 23 (21.9%) | 29 (25.2%) | 0.152* |
| | Group approach by way of lectures, social dramas | 23 (21.9%) | 28 (24.3%) | |
| | Mass approach with the help of mass media | 48 (45.7%) | 37 (32.2%) | |
| | Don’t know | 11 (10.5%) | 21 (18.3%) | |
| Have you heard of E-Cigarettes? | Yes | 18 (17.1%) | 24 (20.9%) | 0.482* |
| | No | 87 (82.9%) | 91 (79.1%) | |
| Do you think there is a need for spreading awareness regarding NRT? | Yes | 104 (99.0%) | 99 (86.1%) | ≤0.001* |
| | No | 1 (1.0%) | 16 (13.9%) | |

*Indicates Chi-Square test

---

**Practices about tobacco control among community health workers**

A greater number, 87 (82.9%), of ASHA and, 48 (41.7%), Anganwadi workers had received formal training in tobacco cessation counseling but 18 (17.1%) ASHA workers and 67 (58.3%) Anganwadi workers stated that they did not perceive any training that showed a high statistically significant difference among the different fields (\( P \leq 0.001 \)). The majority of the ASHA workers, 44 (41.9%), answered that they would spread awareness regarding harmful effects of tobacco and stop it from being sold. On the other hand, 51 (44.3%) Anganwadi workers did not take any specific step which showed statistically significant difference with a \( P \) value of 0.018 among the community health care workers. The majority of ASHA workers, 35 (33.3%), said that they would counsel to avoid company of other tobacco users, if an individual is ready to quit tobacco, whereas Anganwadi workers, 45 (39.1%), say that ideal is to remove tobacco products from the environment (\( P = 0.001 \)) [Table 5].

**Relationship between variables using Spearman’s rank correlation coefficient test**

A positive linear correlation (\( r = +0.561 \)) and a high statistically significant difference (\( P < 0.005 \)) between the knowledge and attitude scores among the community health workers was found by the Spearman’s rank correlation coefficient test. There has been positive correlation between age of initiation of tobacco use amongst people in India and way of quitting the tobacco with statistically significant value (\( r = 0.028 \)) using Spearman’s rank correlation coefficient test. The field-wise correlation data are presented in [Table 6].

**Association between demographic variables and knowledge/attitude scores using regression analysis**

Simple linear regression analysis depicted a significant relationship between knowledge with education qualification (\( P \leq 0.001, R = 0.280 \)), years of experience (\( P \leq 0.001, R = 0.366 \)), and with age (\( P \leq 0.001, R = 0.233 \)). Also, attitude with education qualification (\( P \leq 0.001, R = 0.130 \)), age (\( P \leq 0.001, R = 0.117 \)),...
and years of experience ($P \leq 0.001$, $R = 0.139$) showed a significant relationship by simple linear regression analysis.

Multiple linear regression analysis revealed that the better knowledge scores were significantly associated with education qualification ($P \leq 0.001$) and years of experience ($P \leq 0.001$) but not with age ($0.295$) with dependence value of Adjusted R Square = 0.499, whereas better attitude scores were significantly associated with education qualification ($P \leq 0.001$) and years of experience ($P = 0.021$) but not with age ($P = 0.130$) with dependence value of Adjusted R Square = 0.207 [Table 7].

### Discussion

Tobacco use in India is projected to have devastating consequences. Increased taxes on all tobacco products,
smuggling control, the closing of all promotional routes, and the construction of an infrastructure for law enforcement are all important measures implemented to manage tobacco control through demand reduction.\(^1\) However, this is insufficient to curb tobacco use, more emphasis on prevention, and early management of health problems should be given which will reduce the need for complicated curative care. A proper collaboration of public and private sectors can promote health equity by improving social interrelation, diminish discrimination, and permitting communities to improve health conditions.\(^2\) This study has been done to assess the knowledge, attitude, practice of ASHAs, and Anganwadi workers toward tobacco control, as they play a key role in imparting health education to prevent oral diseases and mobilizing community toward utilizing the health services.\(^3,3\)

There is a growing recognition of the prevalent toll of tobacco use among vulnerable group of population especially among

### Table 5: Practices and its association among community healthcare workers

| Question                                           | Response                                                                 | ASHA workers | Anganwadi workers | \(P\)     |
|----------------------------------------------------|-------------------------------------------------------------------------|--------------|------------------|-----------|
| Have you received formal training in tobacco cessation counseling? | Yes                                                                      | 87 (82.9%)   | 48 (41.7%)       | ≤0.001*   |
|                                                    | No                                                                      | 18 (17.1%)   | 67 (58.3%)       |           |
| Did you take any steps to stop tobacco products from being sold? | Regulating direct advertisements by vendors                             | 18 (17.1%)   | 13 (11.3%)       | 0.018*    |
|                                                    | Ensuring it is not sold to people under 18 years of age                 | 15 (14.3%)   | 20 (17.4%)       |           |
|                                                    | Spreading awareness regarding harmful effects                           | 44 (41.9%)   | 31 (27.0%)       |           |
|                                                    | Have not done anything specific                                         | 28 (26.7%)   | 51 (44.3%)       |           |
| If an individual is ready to quit tobacco, how do you proceed further? | Refer for tobacco cessation counseling to a specialist                    | 26 (24.8%)   | 12 (10.4%)       | 0.001*    |
|                                                    | Advice meditation and other exercises                                    | 21 (20.0%)   | 21 (18.3%)       |           |
|                                                    | Avoid company of other tobacco users                                     | 35 (33.3%)   | 34 (29.6%)       |           |
|                                                    | Remove tobacco products from environment                                 | 18 (17.1%)   | 45 (39.1%)       |           |
|                                                    | Recommend the use of approved medication if needed                       | 5 (4.8%)     | 3 (2.6%)         |           |

*Indicates Chi-Square test

### Table 6: Spearman’s correlations between knowledge and attitude of community healthcare workers

| Parameters                | Spearman’s rho | Knowledge score | Attitude score | Knowledge score | Attitude score |
|---------------------------|----------------|-----------------|----------------|----------------|---------------|
|                           |                | Correlation Coefficient |                | 1.000          | 0.561         |
|                           |                | Sig. (2-tailed)   |                | ≤0.001*        |               |
|                           |                | \(n\)             |                | 220            | 220           |
| Knowledge score           |                | Correlation Coefficient |                | 0.561          | 1.000         |
|                           |                | Sig. (2-tailed)   |                | ≤0.001*        |               |
|                           |                | \(n\)             |                | 220            | 220           |
| Attitude score            |                | Correlation Coefficient |                | 1.000          | 0.149         |
|                           |                | Sig. (2-tailed)   |                | 0.028*         |               |
|                           |                | \(n\)             |                | 220            | 220           |
|                           |                | Correlation Coefficient |                | 0.149          | 1.000         |
|                           |                | Sig. (2-tailed)   |                | 0.028*         |               |
|                           |                | \(n\)             |                | 220            | 220           |

*Correlation is significant at the 0.05 level (2-tailed)

### Table 7: Multivariate linear regression analysis for the association between demographic variables and knowledge/attitude scores of community health workers

| Predictor              | Coefficient | Standard error | \(t\)  | \(P\)     | Adjusted \(R^2\) |
|------------------------|-------------|----------------|--------|-----------|------------------|
| Knowledge              |             |                |        |           |                  |
| Constant               | 0.642       | 5.668          | ≤0.001*| 0.499     |                  |
| Age                    | -0.072      | 0.207          | -1.050 | 0.295     |                  |
| Education qualification| 0.383       | 0.173          | 7.645  | ≤0.001*   |                  |
| Years of service       | -0.443      | 0.137          | -6.417 | ≤0.001*   |                  |
| Attitude               |             |                |        |           |                  |
| Constant               | -0.131      | 0.130          | -1.521 | 0.130     |                  |
| Age                    | 0.270       | 0.109          | 4.285  | ≤0.001*   |                  |
| Education qualification| -0.202      | 0.086          | -2.328 | 0.021     |                  |

*Statistically significant \(P\leq0.05\)
adolescents. In this study, 62.9% of ASHA and 37.4% Anganwadi workers believed that most common age of consumption of tobacco use amongst people in India is 13 to 19 years which is similar to results reported by Chadda et al.\cite{2} stating that adolescents are the most vulnerable group prone to tobacco consumption. This finding reiterates the need to design age-specific tobacco control programmes. Community health worker do home visits for health promotional activities and thus are in ideal position to educate families about ill health effects of tobacco.\cite{3}

This study illustrated 65.7% ASHA and 56.5% Anganwadi workers thinking that adverse health effects concerning tobacco is mainly cancer which is supported by a study conducted by Persai et al.\cite{4} suggesting that ASHA’s relate tobacco mainly to respiratory diseases and lung cancer. However, the matter of concern is the relatively poor recognition of the effects of tobacco adversely on oral health and reproductive health which can lead to life threatening cancer. There is a lack of comprehensive training and motivation to integrate tobacco control practices into their routines.\cite{5}

The findings from this study stated that 94 (89.5%) ASHA workers and 86 (74.8%) Anganwadi workers agreed that tobacco counseling as part of their professional job as they represent the first point-of-care for the majority of tobacco users in the community. However, in contrast, Sommex et al.\cite{6} concluded that lack of time and low patient priority as barriers for primary care physicians in tobacco intervention and thus not able to practice tobacco cessation counseling. Strategies should be established by which PCPs could improve tobacco control.

In this study, 44 (41.9%) ASHA workers and 31 (27.0%) Anganwadi workers stated that they have taken action by raising awareness about the harmful effects of tobacco and its impact on the general public, which is in line with Nebhinani et al.\cite{7} narrative review, which concluded that community connectedness, acceptance by the local community, and knowledge of community health practices enable these professionals to play a role in noncommunicable disease mitigation.

In the explicit findings from this study, majority of ASHA and Anganwadi workers were aware of forms of Nicotine Replacement Therapy (NRT) and they also believed that this drug was not to be prescribed over the counter to avoid overdosage. Most common forms of NRT prescribed are patches 28 (26.22%) and gums 35 (32.2%) according to community health care workers. However, contrasting findings in study by Alsaidi et al.\cite{8} concluded PCPs in Muscat displayed poor knowledge with regard to tobacco dependence treatment services. The PCPs highlighted time constraints as a barrier for establishing cessation programmes as part of the package of treatment in primary health centers.

In this study, 71.4% ASHA and 56.5% Anganwadi workers rightly recognized nicotine was addictive substance in tobacco. In addition, 82.9% ASHA and 79.1% Anganwadi workers showed significant deficit in their knowledge about electronic cigarettes and forms of nicotine replacement therapies. A study by Moysidou et al.\cite{9} found similar results, suggesting that health care practitioners had a substantial lack of awareness of nicotine, NRT, and electronic cigarettes. As a result, it is critical that individuals obtain accurate and reliable information about the use of nicotine replacement therapies, as these play a key role in lowering their health risks.

In the explicit findings from our study, majority of ASHAs (89.5%) and Anganwadi (74.8%) workers had positive attitude of considering tobacco counseling part of their professional job which is supported by a study conducted by Shwetha et al.\cite{10} on ASHAs attitude toward raising awareness on oral cancer, which concluded that the overall attitude was favorable (82.4%) as they believed disease prevention as their responsibility (53.9%). More than half of the ASHAs (55.5%) expressed satisfaction sharing information about oral cancer and its repercussions among people, might be because of personal experiences (43.9%).\cite{11}

Community health workers play an essential role in providing counseling services to the community. Majority of community health workers reported that patients hold negative attitudes toward counseling.\cite{12} This view of them suggests that community health workers are unaware of the effectiveness of behavioral counseling in influencing tobacco cessation.\cite{13} Community health workers relay indispensable role by facilitating access to health services, providing information, spreading awareness, and mobilizing communities to realize health rights with a key support system of village health committee, holding meetings, and mass approach using mass media.\cite{14,15}

In summary, our study recognizes a chance to significantly expand the reach of tobacco control services to urban low- and middle-income populations in India by deploying community health care workers. Hence, dissemination of education, adoption of preventive services guidelines, and tobacco cessation services in primary health care centers may provide an urgently needed fill-in to tobacco control efforts in India.\cite{16,17} Community health workers understand the needs of community and can be trained to identify premalignant lesions and deploy patients relatively quickly to the concern health care centers.\cite{18,19} As part of their training, routine monitoring, and supervision, special inputs in enhancing social justice by reducing health inequities at the community level should be stressed.\cite{20,21} In addition, abilities in assisting with community collectivization for public health measures where individual action may not bear fruit are needed to be strengthened.\cite{22,23}

**Conclusion**

It is a well-known truth that most dental disorders may be avoided if people are informed of preventative measures and
encouraged to follow them. It is precisely the role that community health workers can play as health educators and mobilizers. Overall knowledge and attitude toward tobacco control of ASHA workers had been superior to Anganwadi workers. Also, majority of ASHA workers received training in tobacco cessation counseling as compared with Anganwadi workers. However, knowledge about tobacco and its consequences is below optimal level among community health workers. Hence, there is a sustainable need that community health workers should be well-versed in the areas of dental health and disease as part of their training in order to lessen the burden on primary care physicians.

Acknowledgements

We would like to acknowledge Additional Chief Secretary of the Department of Women and Child Development for granting permission to conduct this study

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Key Messages

Tobacco cessation activities will have to be initiated and implemented by all stakeholders of the health care delivery systems specially grassroot level workers who work in close proximity to community

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. SampathH, Sharma D, Soohinda G. A study of knowledge, attitudes, and practices towards tobacco cessation services (TCS) among clinicians in a tertiary care teaching hospital. Int JPharma Bio Sci2019;9.doi: 10.22376/ijpbs/lpr.2019.9.3.l.1-10.
2. Chadda RK, Sengupta SN. Tobacco uses by Indian adolescents. Tob Induc Dis 2002;1:8.
3. Mishra GA, Pimple SA, Shastri SS. An overview of the tobacco problem in India. Indian JMedPaediatr Oncol2012;33:139-45.
4. Persai D, Panda R, Mathur MR. Self-reported practices and attitudes of community health workers (Accredited Social Health Activist) in tobacco control-Findings from two states in India. Int J Prev Med 2015;6:48.
5. Global Tobacco Surveillance System Collaborating Group. Global Tobacco Surveillance System (GTSS): Purpose, production, and potential. J Sch Health 2005;75:15-24.
6. Sonmez CI, Aydin LY, Turker Y, Baltaci D, Dikici S, Sariguzel YC, et al. Comparison of smoking habits, knowledge, attitudes and tobacco control interventions between primary care physicians and nurses. TobInducDis 2015;13:37.
7. Nebhinani M, Saini SK. Leveraging role of non-physician health workers in prevention and control of non-communicable diseases in India: Enablers and challenges. J Family Med PrimCare 2021;10:595-600.
8. Alsaidi Y, AlMaskari B, Chan MF, Al Sumri S, Alhamrashdi H. Knowledge, attitudes and practices of primary care physicians regarding tobacco dependence treatment in Muscat Governorate, Oman: A cross-sectional study. Sultan Qaboos Univ Med J 2021;21:563-71.
9. Moysidou A, Farsalinos KE, Voudris V, Merakou K, Kourea K, Barbouni A. Knowledge and perceptions about nicotine, nicotine replacement therapies and electronic cigarettes among healthcare professionals in Greece. IntJEnviron ResPublic Health 2016;13:514.
10. Shwetha KM, Ranganath K, Pushpanjali K. Attitude of accredited social health activists towards creating awareness on oral cancer in rural community of Chikkaballapur district, Karnataka. Indian J Community Med 2019;44:546-9.
11. Vinnakota NR, Sanikommu S, Ahmed Z, Kamal Sha SK, Boppana NK, Pachava S. Is accredited social health activists’ basic oral health knowledge appropriate in educating rural Indian population? Indian J Dent Res 2017;28:503-6.
12. Udani RH, Chothani S, Arora S, Kulkarni CS. Evaluation of knowledge and efficiency of Anganwadi workers. Indian J Pediatr 1980;47:289-92.
13. Sharma I, Sarma PS, Thankappan KR. Awareness, attitude and perceived barriers regarding implementation of the cigarettes and other tobacco products act in Assam, India. Indian J Cancer 2010;47(Suppl 1):63-8.
14. Kokane AM, Mitra A. Preparedness of primary health care providers for tobacco cessation-Experiences from a non-communicable disease training program. Indian J Cancer 2020;57:443-50.
15. Satyarup D, Dalai RP, Nagarajappa R, Naik D, Mohanty I. Effectiveness of trained health workers in improving the oral hygiene of preschool children. Rocz Panstw Zakl Hig 2021;72:77-82.
16. Mony PK, Vishwanath NS, Krishnan S. Tobacco use, attitudes and cessation practices among healthcare workers of a city health department in Southern India. J Family Med Prim Care 2015;4:261-4.
17. Srivastava SR, Srivastava PS. Evaluation of trained Accredited Social Health Activist (ASHA) Workers regarding their knowledge, attitude and practice about child health. Rural Remote Health 2012;12:2099.
18. Jain A, Walker DM, Avula R, Diamond-Smith N, Gopalakrishnan L, Menon P, et al. Anganwadi worker time use in Madhya Pradesh, India: A cross-sectional study. BMC Health Serv Res 2020;20:1130.
19. Fathima FN, Raju M, Varadarajan KS, Krishnamurthy A, Ananthikumar SR, Mony PK. Assessment of ‘accredited social health activists’—A national community health volunteer scheme in Karnataka State, India. JHealthPopulNutr 2015;33:137-45.
20. Jeet G, Thakur JS, Prinja S, Singh M. Community health workers for non-communicable diseases prevention and control in developing countries: Evidence and implications.
21. Zulkiply SH, Ramli LF, Fisal ZA, Tabassum B, Abdul Manaf R. Effectiveness of community health workers involvement in smoking cessation programme: A systematic review. PLoS One 2020;15:e0242691.

22. Rajesh G, Pinto AS, Binnal A, Naik D, Rao A. Counselling as a tool for tobacco cessation in a dental institution: Insights from India. Asian Pac J Cancer Prev 2019;20:2541-50.

23. Shimkhada R, Peabody JW. Tobacco control in India. Bull World Health Organ 2003;81:48-52.

24. Chaly PE. Tobacco control in India. Indian J Dent Res 2007;18:2-5.
Pai Khot et al.: Knowledge, attitude, and practices toward tobacco control among rural community health care workers

| Question | Knowledge | Attitude |
|----------|-----------|----------|
| 1. | 1. Yes | 2. No |
| 2. | 1. Yes | 2. No |
| 3. | 1. Yes | 2. No |
| 4. | 1. Yes | 2. No |
| 5. | 1. Yes | 2. No |
| 6. | 1. Yes | 2. No |
| 7. | 1. Yes | 2. No |
| 8. | 1. Yes | 2. No |
| 9. | 1. Yes | 2. No |
| 10. | 1. Yes | 2. No |
|   |   |
|---|---|
| 11 | Knowledge, attitude, and practices toward tobacco control among rural community health care workers |
| 12 | Pai Khot et al.: Knowledge, attitude, and practices toward tobacco control among rural community health care workers |
| 13 | Journal of Family Medicine and Primary Care 3268 |
| 14 | Volume 11 : Issue 6 : June 2022 |
| 15 | M. M. S. Ismail et al.: Knowledge, attitude, and practices toward tobacco control among rural community health care workers |
| 16 | Pai Khot et al.: Knowledge, attitude, and practices toward tobacco control among rural community health care workers |
| 17 | M. M. S. Ismail et al.: Knowledge, attitude, and practices toward tobacco control among rural community health care workers |
| 18 | Pai Khot et al.: Knowledge, attitude, and practices toward tobacco control among rural community health care workers |
| 19 | M. M. S. Ismail et al.: Knowledge, attitude, and practices toward tobacco control among rural community health care workers |
| 20 | Pai Khot et al.: Knowledge, attitude, and practices toward tobacco control among rural community health care workers |
| 21 | Knowledge, attitude, and practices toward tobacco control among rural community health care workers |
|----|------------------------------------------------------------------------------------------------------------------|
| 1. | Knowledge |
| 2. | Attitude |
| 3. | Practices |

5. Aniruddha Mehta