Knowledge, Perception and Practices Regarding Nicotine Replacement Therapy (NRT) Among Pharmacists across Mumbai and Navi Mumbai, Maharashtra: A Pilot Study to Assess the Role of Pharmacists in Tobacco Cessation in Indian Scenario

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Knowledge, Nicotine Replacement Therapy, pharmacists, Tobacco cessation

ABSTRACT:
Background and Aim: To achieve Tobacco cessation various methods have been studied including patient education about the ill effects of tobacco, behavior counselling and pharmacotherapy. For patients who prefer purchasing over-the-counter NRT to help them with tobacco cessation, the community pharmacist may be the only health care provider to interact with the patient at the initial stages and in between the quit attempt. Since there are no such studies conducted in India so far, to explore these aspects we have undertaken this study to assess the Knowledge, Perception and Practices of pharmacists in Mumbai and Navi Mumbai regarding NRT and its products.
Material and Methods: Cross-sectional questionnaire research was conducted to assess the Knowledge, Perception and Practices Regarding Nicotine Replacement Therapy (NRT) Among Pharmacists Across Mumbai and Navi Mumbai, Maharashtra. All participants were interviewed by a single investigator. Questionnaire included 21 questions. Total 10 questions were related to knowledge which were multiple choice question with one correct answer.5 questions were related to their perception and 6 questions were related to their practices related to NRT. Data was collected from pharmacies which were registered under Maharashtra State Pharmacy Council.
Results: Availability of NRT products at the pharmacy was observed among 89.5% pharmacists while 10.5% of pharmacists did not have it available. 96.8% pharmacists were aware about Nicotine Replacement Therapy while 3.3% pharmacists were unaware. On comparing Knowledge with Perception, overall pharmacists with higher Mean Knowledge Score had positive perception about NRT as compared to those with lower Mean Knowledge Score. This difference was found to be statistically significant. 176 (44%) pharmacists with higher mean knowledge score (7.75±2.353) do not sell NRT without prescription while 224 (56.1%) pharmacists with lower mean knowledge score (6.54±1.889) sell NRT without prescription (P value = 0.000).
Conclusion: Present study provides vital information about the current status of knowledge, perception and practice regarding NRT among pharmacists across Mumbai Metropolitan Region, Maharashtra.

Introduction:

Consuming tobacco in combustible or smokeless form presents a serious public health threat causing millions of deaths globally every year, much more than deaths due to human immunodeficiency viruses (HIV), tuberculosis and malaria combined (1). Tobacco addiction (specifically to nicotine) requires treatment (2). Tobacco use prevalence in India is high, with 28.6% (266.8 million users) of adults (aged 15 years and above) using tobacco in some form (3). Despite of being aware about the ill-effects of tobacco, there is continual use of tobacco due to physical addiction, habit, social or cultural factors (4). Those who recognize that their addiction is the obstacle preventing them from quitting tobacco are more likely to seek treatment. (5)(6)

To achieve Tobacco cessation various methods have been studied including patient education about the ill effects of tobacco, behavior counselling and pharmacotherapy. Nicotine Replacement Therapy is the most commonly used pharamacological intervention (7). Nicotine replacement products (NRPs) contain pure nicotine that reduces the patient's tendency towards tobacco consumption by increasing nicotine levels in the bloodstream, which makes the person smoke fewer cigarettes, resulting in reduction in the consumption and toxicity related to it (8) (9). Nicotine [(S)-3-(1-methylpyrrolidin-2-yl) pyridine] stimulates neural nicotinic acetylcholine receptors in the ventral tegmental area of the brain, which releases dopamine in nucleus accumbens that decreases nicotine withdrawal symptoms in regular smokers who try to quit smoking(10)(11)

Pharmacists in the community are at a good position to assist tobacco users in their cessation process as they are one of the most accessible health care providers, patients can receive health care information, typically at no expense and without the need for appointments (12) (13). For patients who prefer purchasing over-the-counter NRT to help them with tobacco cessation, the community pharmacist may be the only health care provider to interact with the patient at the initial stages and in between the quit attempt. Pharmacists can assess the readiness to quit of an individual and provide corresponding recommendations and counseling regarding tobacco use cessation and NRT. (14)(15)

Since there are some health concerns associated with prolonged and unchecked NRT use and Nicotine gums being available as OTC drug, its sale and responsibility of pharmacists increases significantly. They should be aware about the dose, duration, correct method of using NRT, basic health concerns associated with NRT. Since there are no such studies conducted in India so far, to explore these aspects we have undertaken this study to assess the Knowledge, Perception and Practices of pharmacists in Mumbai and Navi Mumbai regarding NRT and its products.

Methodology:

Cross-sectional questionnaire research was conducted to assess the Knowledge, Perception and Practices Regarding Nicotine Replacement Therapy (NRT) Among Pharmacists Across Mumbai and Navi Mumbai, Maharashtra. The study included Pharmacists with B Pharm or D Pharm or master's degree who agreed to be part of this research. Ethical clearance was obtained from the Institutional Review Board and an informed consent was obtained from the study participants.

Pilot study: A pilot study was conducted among 30 pharmacists to check for validity, reliability and to derive the sample size. The questions were framed after thorough review of the literature, and with the help of four experts, the questions were reviewed for content validity. Cronbach's coefficient was found to be 0.80, which showed good internal reliability of the questionnaire. Based on the results of pilot study, the sample size was calculated to be 384. The sample size was calculated using G*Power 3.0.10 Universitat Dusseldorf based on responses observed in the pilot study (alpha error at 5%, power of study at 80%, P1 = 50%, P2 = 50%)

All participants were interviewed by a single investigator. Questionnaire included 21 questions. Questions were closed ended Information about basic demography, about NRT products at pharmacy, various questions inquiring about basic knowledge, their perception about NRT, different forms of NRT available at their

pharmacy, common, about dosage of NRT, nicotine dependency etc were included in the questionnaire. Total 10 questions were related to knowledge which were multiple choice question with one correct answer.5 questions were related to their perception and 6 questions were related to their practices related to NRT.

Data was collected from pharmacies which were registered under Maharashtra State Pharmacy Council. (MSPC Online Portal (mspcindia.org))

Data analysis The data were analyzed using SPSS version 17 (Inc., Chicago, IL, USA). $P \leq 0.05$ was considered statistically significant (confidence interval of 95%). Descriptive statistics were carried out to calculate responses for each question. Mean knowledge score was calculated. Further analysis was performed to find the difference between knowledge score with age and their practice of selling NRT without prescription. This comparison was done by using Student's t test (unpaired).

Questionnaire Results

This study was conducted to assess the knowledge, perception and practice of NRT by the Pharmacists in Mumbai & Navi Mumbai and consisted of participation of 400 Pharmacists.

Knowledge of Pharmacist regarding NRT (Table1)

Availability of NRT products at the pharmacy was observed among 89.5% pharmacists while 10.5% of pharmacists did not have it available. 96.8% pharmacists were aware about Nicotine Replacement Therapy while 3.3% pharmacists were unaware. 91.3% pharmacists knew that NRT helps in quitting tobacco while 8.8% were unaware of its use. 68% pharmacists were aware that NRT helps in reducing the psychological and physical dependence on tobacco products while 24.8% pharmacists knew reduction of only either of the dependence and 7.2% were totally unaware about this use of NRT. 72% pharmacists were aware that NRT should not be advised for below 18 years of age, non-users of tobacco and pregnant women while 14% pharmacists were not aware about the contraindication of NRT in all of these groups. Only 16.8% pharmacists were aware that a maximum of 24 pieces of nicotine gums can be used in a day while 83.2% pharmacists had no knowledge about the correct dosage. 51% pharmacists knew that eating and drinking should be avoided 15 minutes prior to taking nicotine gums and while chewing nicotine gums and around one-fourth (23.8%) pharmacists had no idea that this instruction should be given to patients taking NRT. Only 29.3% pharmacists had the correct knowledge about the maximum duration of use of NRT, which is up to 12 weeks while 70.7% pharmacists are unaware about the it. 62% pharmacists were aware that smoking 25 or more cigarettes per day, smoking within 30 minutes of waking up, having trouble in not smoking in restricted area indicates high dependence of patients on tobacco while 38% pharmacists were not aware about all of these factors. Only 59% pharmacists knew the correct method of using nicotine gums, which is chewing and parking the gum between cheek and teeth while 41% pharmacists do not know about the correct method of using nicotine gums.

Number and percentage of Perception and Practice among Pharmacist are depicted in Table 2, 3 & 4

On comparing Knowledge with Perception, overall pharmacists with higher Mean Knowledge Score had positive perception about NRT as compared to those with lower Mean Knowledge Score. This difference was found to be statistically significant. (P value < 0.05)

54 (13.5%) pharmacists with higher mean knowledge score (7.83 ± 1.921) had the positive perception of not having the need for all tobacco users to use NRT while 346 (86.5%) pharmacists with lower mean knowledge score (6.95 ± 2.206) agree with or are uncertain about the need (P value = 0.006). 267 (66.8%) pharmacists with higher mean knowledge score (7.88±1.977) had the positive perception of development of dependency on nicotine gums due to prolonged and unassisted use while 133 (33.3%) pharmacist with lower mean knowledge score (5.44±1.602) disagree with or are uncertain about the dependency (P value = 0.000). 352 (88%) pharmacists with higher mean knowledge score (7.46±1.956) had the positive perception of the necessity of

physician's consent before starting NRT in patients having systemic diseases while 48 (12%) pharmacists with lower mean knowledge score (4.21±1.597) disagree with or are uncertain about the need (P value = 0.000). 358 (89.6%) pharmacists with higher mean knowledge score (7.29±2.113) agree on supporting the tobacco-use patients with behavioral counseling along with NRT while 42 (10.6%) pharmacists with lower mean knowledge score (5.21±1.945) disagree with or are uncertain about it (P value = 0.000). 388 (97.1%) pharmacists with higher mean knowledge score (7.28±2.322) felt the need to include the Tobacco Cessation Counseling training during their UG curriculum while 12 (3%) pharmacists with lower mean knowledge score (6.87±1.832) disagree (P value = 0.003).

Comparison of knowledge score with Perception Practice

176 (44%) pharmacists with higher mean knowledge score (7.75±2.353) do not sell NRT without prescription while 224 (56.1%) pharmacists with lower mean knowledge score (6.54±1.889) sell NRT without prescription (*P* value = 0.000). Without prescription, 125 (31.3 %) pharmacists with highest mean knowledge score (8.18±2.307) decide dosage of Nicotine gums on the basis of instructions given on packet, 136 (34%) pharmacists with mean knowledge score (6.79±2.284) rely on patient's demand, 82 (20.5%) pharmacists with mean knowledge score (6.55±1.467) decide on the basis of patient's dependency on tobacco, while 57 (14.2%) pharmacists with lowest mean knowledge score (6.05±1.505) do not know how to decide the dosage (P value = 0.000).

Discussion

A vast majority of global tobacco usage (80%) is observed in countries like India with low and middle income groups. (16). Of the 99.5 million current adult smokers in India, more than half have an intention to quit, two in five current smokers are already making an attempt to quit, and seven in ten current smokers are trying to quit without assistance. (17) Hence these smokers may have a 50–60% higher chance of quitting with NRT (18) , and that the limited NRT usage among current and former smokers in present times (17) may improve soon. Patients approach pharmacists more easily than a medical professional as they do not feel themselves as sick patients in front of pharmacist and also due to the easy availability of pharmacist. A similar study was conducted in USA where they concluded that utilizing community pharmacists to offer tobacco cessation services can help in taking better care of tobacco-use patients who don't have much access to medical help for quitting tobacco (19)

Since NRT as an over-the-counter drug is associated with some health concerns on unassisted and prolonged use, it is necessary for the pharmacist to have basic knowledge about NRT when dispensing it to tobacco-use patients. This is the first study conducted in Mumbai and Navi Mumbai to assess the knowledge, perception and practice of pharmacist regarding NRT and how they can help in the tobacco cessation program. Nicotine replacement therapy (NRT), for the first time, was included in the National List of Essential Medicines (NLEM) by the Government of India on September 13, 2022 (20), which indicates that tobacco cessation is a priority healthcare need of the Indian population. To cater to this need, educating pharmacists about NRT, its products and instructions to be given to tobacco patients becomes a necessity since patients approach them easily. Therefore, we need to assess the knowledge of the pharmacists regarding NRT and their current perceptions and practices.

In this study, it was observed that 89.5% pharmacists had NRT products available at their pharmacy, hence being an easy source of purchase for tobacco users. Majority of the pharmacists had knowledge about NRT, its products, how NRT helps with physical and psychological dependence on tobacco. However a significant percentage of pharmacists had little knowledge about NRT's use, contraindications, dosage, duration and correct methods of using NRT indicating the need to educate pharmacists about NRT and its products. Around one-third (33.3%) of pharmacists were not aware that prolonged and unassisted use of nicotine gums can lead to the development of dependency on the gums. Around 12% pharmacists were unaware about the necessity of physician's consent before starting NRT in patients with systemic disease. Pharmacists with higher knowledge

score feel need for inclusion of Tobacco Cessation Counseling training during their UG curriculum so that they can assist tobacco-use patients in their tobacco cessation journey better. This study shows that a significant number of pharmacists do not have complete knowledge about NRT and the correct methods of using it. Since 56% pharmacists sell over-the-counter NRT products without physician's prescription, it is necessary for pharmacists to have complete knowledge about NRT, its dosage, methods of use and contraindications. Although majority of them have a positive perception about NRT for tobacco cessation, it cannot be used without complete knowledge on dosage, duration and contraindications. Overall it was observed that pharmacists with higher mean knowledge score had positive perception regarding NRT and are willing to get trained for tobacco cessation program. Early management of tobacco patients by pharmacists using NRT can prevent a lot of future complications to the patient, hence it is necessary to formally educate all pharmacists about NRT and its products.

This study has following limitations, this study included the knowledge of pharmacists only about pharmacological assistance (NRT) for tobacco cessation and not about the non-pharmacological assistance such as behavior counseling, in-person emotional help and advised dietary changes. The region in which the study was conducted limited the variety of pharmacists that could be included as it took place in an urban area. Further studies are required to include the assessment of knowledge on non-pharmacological assistance along with NRT and to also conduct this study in rural areas. Despite these limitations, this study provides vital information about the current status of knowledge, perception and practice regarding NRT among pharmacists across Mumbai Metropolitan Region, Maharashtra.

Table 1: General Questions regarding Knowledge among pharmacist about NRT

Question	Response	Frequency	Percentage
Q.1) Do you have Nicotine Replacement Therapy (NRT) products available at your pharmacy?	a) Yes (1) b) No (2)	358 42	89.5 10.5
Q.2) Are you aware of Nicotine Replacement Therapy (NRT)?	a) Yes (1) b) No (2)	387 13	96.8 3.3
Q.3) Do you think NRT helps in quitting tobacco?	a) Yes (1) b) No (2)	365 35	91.3 8.8
Q.4) NRT deals with	a) Psychological dependence (1) b)Physical dependence (2) c) Both (3) d) Don't know (4)	 65 34 272 29	 16.3 8.5 68.0 7.2
Q.5) Who should not use NRT?	a) Below 18 yrs of age (1) b) Non-users of tobacco (2) c) Pregnant women (3) d) Tobacco user (4) e) a, b, c, d (5)	56 37 18 1 288	14.0 9.3 4.5 0.3 72.0
Q.6) What is the maximum no. of Nicotine gums that can be used in a day?	a) Not more than 24 pieces of nicotine gums (1) b) Not more than 48 pieces (2) c) Depends on patient's dependency (3) d) Don't know (4)	 67 24 233 76	 16.8 6.0 58.3 19.0
Q.7) How long eating or drinking should be avoided while taking NRT?	a) 15 minute prior of taking nicotine gums (1)	68	17.0

	b)Avoid eating while chewing nicotine gums (2) c) Both a and b (3) d) Don't know (4)	33 204 95	8.3 51.0 23.8
Q.8) How long patient can use Nicotine gums?	a) Up to 12 weeks (1) b) Up to 6 months (2) c)Till patient's requirement (3) d) Don't know (4)	117 81 125 77	29.3 20.3 31.3 19.3
Q.9) How do you know patient is highly dependent on tobacco?	a) Smoke 25 or more cigarettes per day (1) b) Smoke within 30 minutes of waking up (2) c) Having trouble not smoking in restricted area (3) d) All of the above (4)	102 31 19 248	25.5 7.8 4.8 62.0
Q.10) What is the correct method of using gums?	a) Chew the gum and park it in cheek and teeth (1) b) Chew the gum and park it in lower lip and teeth (2) c) Chew and swallowing the gum (3) d) Don't know (4)	236 64 16 84	59.0 16.0 4.0 21.0

Table 2: Distribution of pharmacists according to their perception towards NRT

Q.11) All tobacco users need NRT to stop tobacco habit?	a) Strongly agree b) Agree c) Uncertain d) Disagree e) Strongly disagree	36 196 114 54 0	9.0 49.0 28.5 13.5 0
Q.12) Prolonged use of Nicotine gums can lead to dependency on gums?	a) Strongly agree (1) b) Agree (2) c) Uncertain (3) d) Disagree (4) e) Strongly Disagree (5)	23 244 118 14 1	5.8 61.0 29.5 3.5 0.3
Q.13) Patients need to discuss with physician before starting any form of NRT?	a) Strongly agree (1) b) Agree (2) c) Uncertain (3) d) Disagree (4) e) Strongly disagree (5)	84 268 40 7 1	21.0 67.0 10.0 1.8 0.3
Q.14) Patients should be supported with behavioral counselling along with NRT?	a) Strongly agree b) Agree c) Uncertain d) Disagree e) Strongly Disagree	79 279 35 7 0	19.8 69.8 8.8 1.8 0
Q.15) Tobacco cessation counseling training should be given during your undergraduate curriculum?	a) Strongly agree b) Agree c) Disagree d) Strongly disagree	143 245 12 0	35.8 61.3 3.0 0

Table 3: Distribution of pharmacists according to their practice of NRT

Q.16) Which forms of NRT available at your pharmacy?	a) Nicotine gums (1) b) Nicotine patches (2) c)Nicotine nasal spray (3) d)Nicotine sublingual tablet (4)	287 56 53 4	71.8 14.0 13.3 1.0
Q.17) Which age group of people often comes to buy NRT in pharmacy?	a) < 18 years (1) b) 19-30 years (2) c) 30-50 years (3) d) >50 years (4)	69 127 187 17	17.3 31.8 46.8 4.3
Q. 18) Do you sell Nicotine gums without prescription?	a) Sometimes (1) b) Always (2) c)No, we don't sell without prescription (3) d) We don't keep it (4)	159 65 152 24	39.8 16.3 38.0 6.0
Q.19) Which form of NRT is given without prescription or as over the counter drug?	a) Nicotine gums (1) b) Nicotine patches (2) c)Nicotine nasal spray (3) d) Nicotine sublingual tablet (4)	313 32 49 6	78.3 8.0 12.3 1.5
Q.20) How do you decide dosage of Nicotine gums while giving without prescription?	a) On patient demand (1) b) Based on dependency of patient on tobacco (2) c)Based on instructions given on packet (3) d) Don't know (4)	136 82 125 57	34.0 20.5 31.3 14.2
Q. 21) Do you tell your patient to stop taking tobacco products before starting NRT?	a) Yes (1) b) No (2)	354 46	88.5 11.5

Table 4: Comparison of Mean knowledge score with perception and practices of pharmacist related to nicotine replacement therapy.

Q. 11) All tobacco users need NRT to stop tobacco habit?				
Perception	N	Mean K score	Standard Deviation	P value
Negative (0)	346	6.95	2.206	0.006
Positive (1)	54	7.83	1.921	
Q.12) Prolonged use of nicotine gum can lead to dependency on gums?				
Perception	N	Mean K Score	Standard Deviation	P value
Negative (0)	133	5.44	1.602	0.000
Positive (1)	267	7.88	1.977	
Q. 13) Patients need to discuss with physician before starting any form of NRT?				
Perception	N	Mean K Score	Standard Deviation	P value

Negative (0)	48	4.21	1.597	0.000
Positive (1)	352	7.46	1.956	
Q. 14) Patients should be supported with behavioral counseling along with NRT?				
Perception	N	Mean K Score	Standard Deviation	P value
Negative (0)	42	5.21	1.945	0.000
Positive (1)	358	7.29	2.113	
Q. 15) Tobacco cessation counseling training should be given during your undergraduate course?				
Perception	N	Mean K Score	Standard Deviation	P value
Negative (0)	12	6.87	1.832	0.003
Positive (1)	388	7.28	2.322	
Q. 18) Do you sell nicotine gums without prescription?				
Sell NRT	N	Mean	Standard Deviation	P value
Yes (1)	224	6.54	1.889	0.000
No (2)	176	7.75	2.353	
Q. 20) How do you decide dosage of nicotine gums while giving without prescription?				
	N	Mean	Standard Deviation	P value
On patient demand (1)	136	6.79	2.284	0.000
Based on dependency of patient on tobacco (2)	82	6.55	1.467	
Based on instructions given on packet (3)	125	8.18	2.307	
Don't know (4)	57	6.05	1.505	

Figure 1: Perception about inclusion of Tobacco cessation counselling should in the pharmacy curriculum

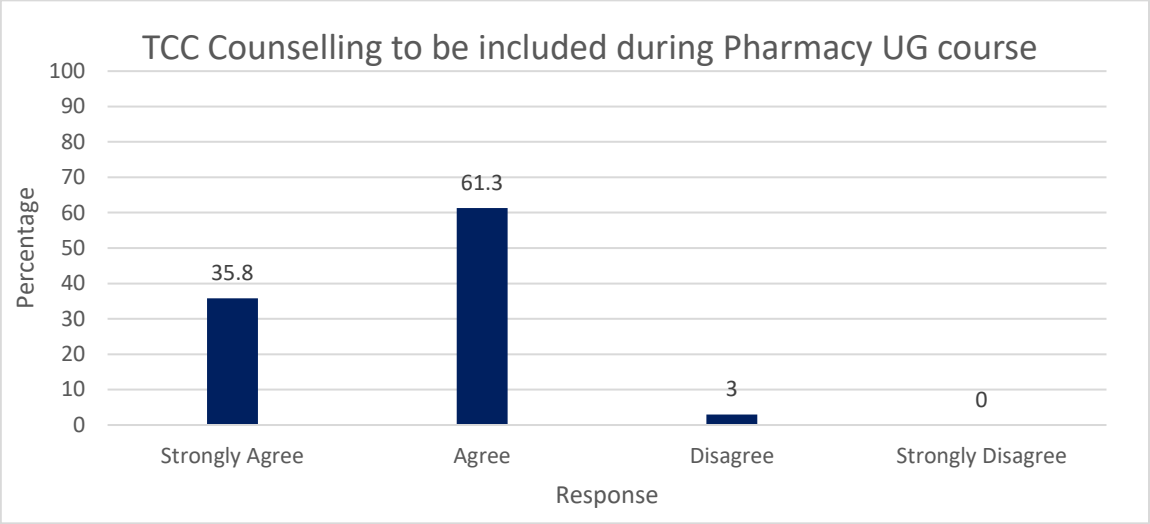


Figure 2: Forms of NRT are available at pharmacy

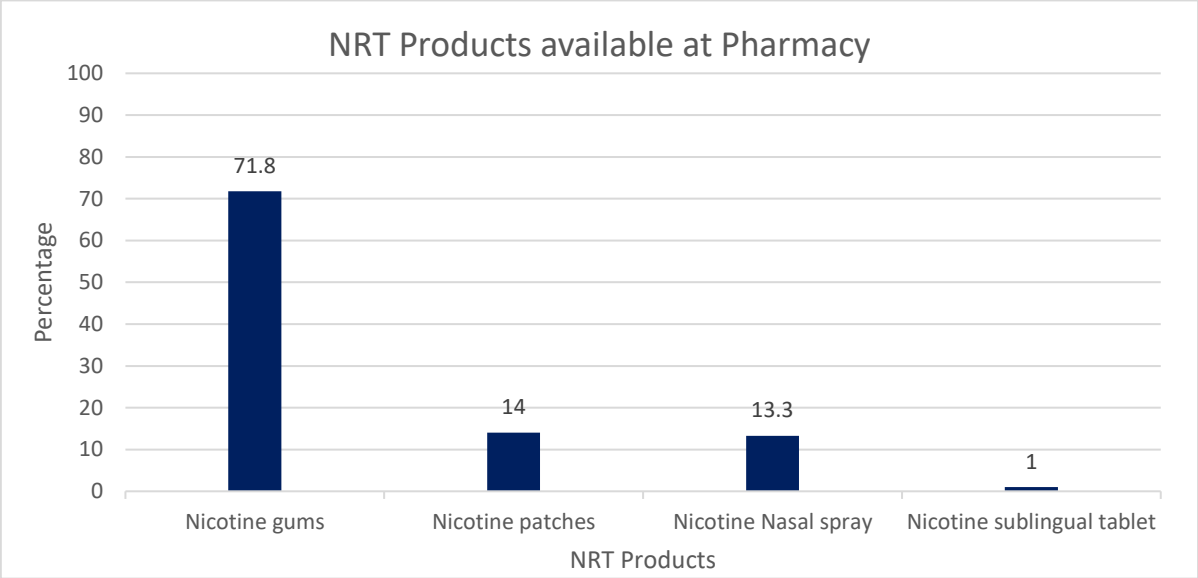


Figure 3: Age group of people often come to buy NRT products at various pharmacies

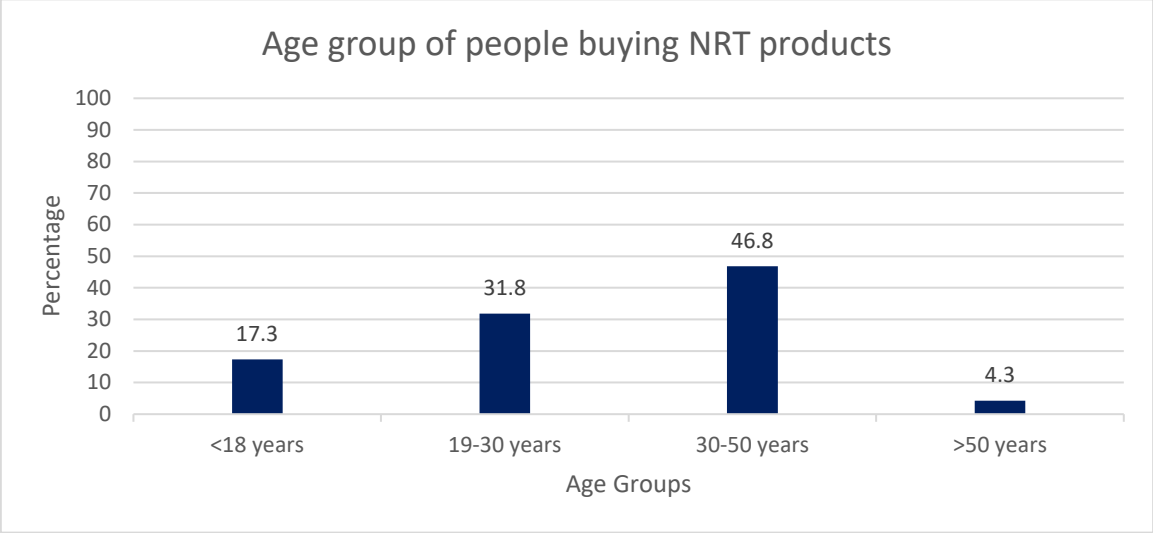


Figure 4: Form of NRT, which is given without prescription or as over the counter drug

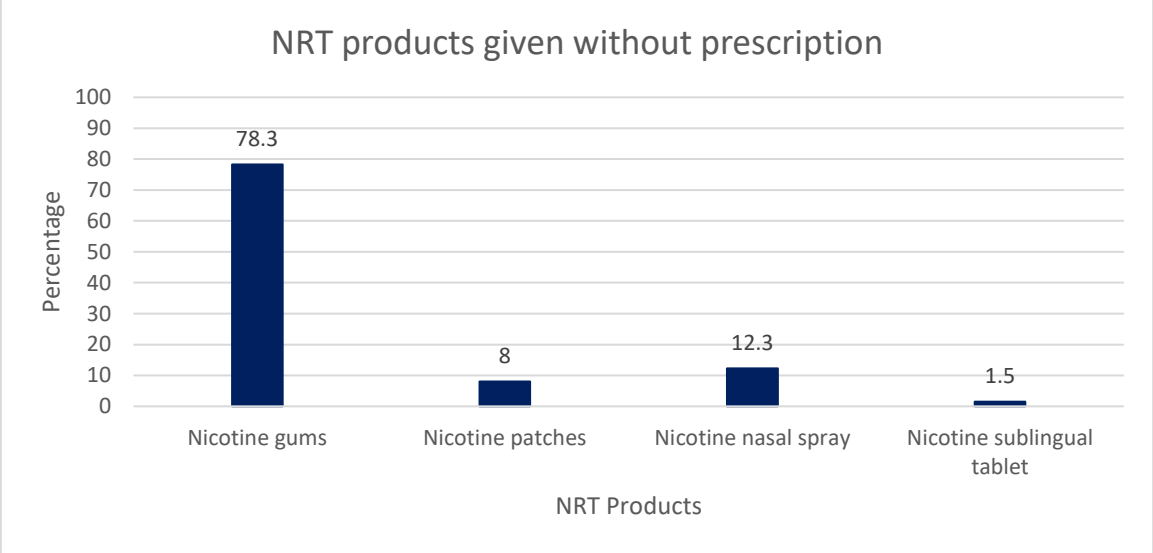
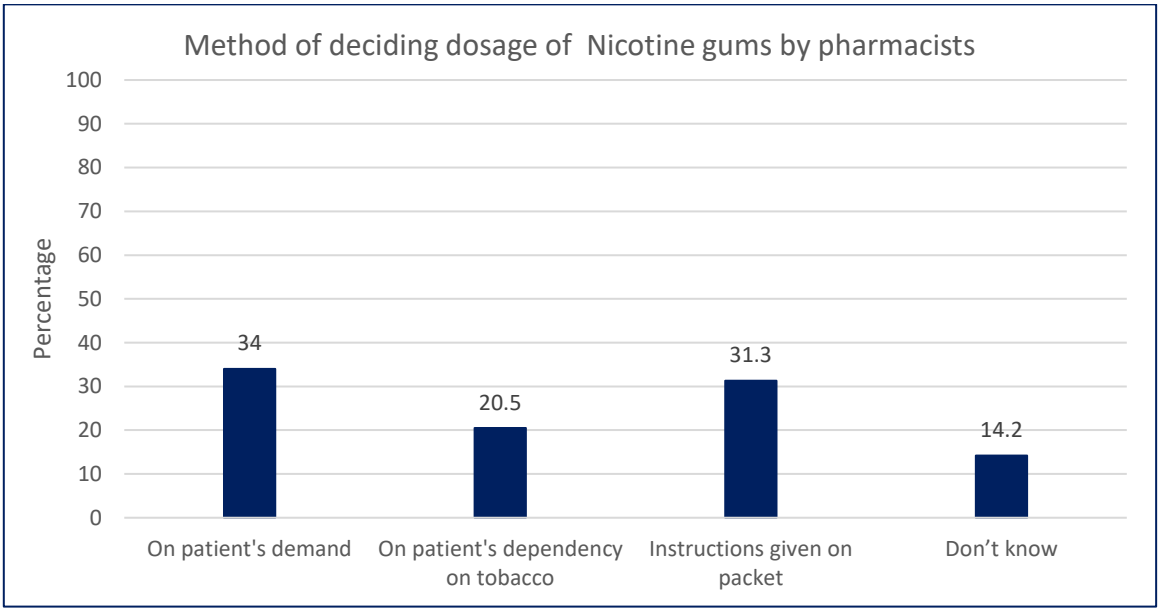


Figure 5: Decision about the dosage of Nicotine gums while giving without prescription



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