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Research Article

Pharmacist Recommendations for Adolescent Smoking Cessation: Results from a Delphi Study

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Abstract

While pharmacological and behavioral treatments exist for smoking cessation, there are currently no best practices for helping adolescents quit smoking. This study aimed to reach consensus regarding pharmacist recommendations for adolescent smoking cessation. Using a three-round Delphi technique, pharmacists across the USA with experience working with adolescent substance use provided quantitative and qualitative feedback on recommendations. Forty pharmacists completed Round 1, 37 completed Rounds 2 and 3. In Round 1, 36 (90%) responses included the nicotine patch, gum, or lozenge. Ten recommendations were identified in Round 1: nicotine patch, nicotine gum, nicotine lozenge, bupropion SR, varenicline, quitline, smoking cessation program, counseling, behavioral approaches, and cold turkey. In Round 2, pharmacists were most likely to recommend smoking cessation programs (median=7 of 7, Interquartile range [IQR]=1) and least likely to recommend varenicline (median=3, IQR=3). In Round 3, consensus to recommend was reached on smoking cessation program (83.3% likely or very likely to recommend). Despite initially recommending nicotine replacement therapy in Round 1, by Round 3 most pharmacists were more likely to recommend behavioral treatments than pharmacological interventions for this patient population. Such preferences by pharmacists could influence the accessibility of various treatments to adolescent smokers.

ABBREVIATIONS

NRT: Nicotine Replacement Therapy; IQR: Interquartile Range

INTRODUCTION

Tobacco use remains the leading preventable cause of disease and death worldwide [1]. Despite decades of tobacco prevention initiatives, more than 3,800 teens under 18 try smoking each day [2]. As their brains are not yet fully developed, adolescents are more susceptible to the addictive chemicals within combusted cigarettes, and, therefore, more likely to become addicted despite sporadic smoking habits [3]. Furthermore, successful quit attempts among adolescent smokers are rare, perhaps due to lack of best practice guideline for this population [3].

Behavioral strategies have been used in adolescent smoking cessation interventions, including cognitive based therapy, contingency management, and motivational interviewing, in multiple formats such as telephone-based, internet-based, and school-based [4]. The most current clinical guideline reported

some evidence for support for counseling (a broad term which covers multiple behavioral approaches) but stated additional research is needed in adolescent smoking cessation [3].

Medication options include bupropion slow release (SR) (i.e. Wellbutrin, Zyban), nicotine gum, nicotine inhaler, nicotine lozenge, nicotine nasal spray, nicotine patch, and varenicline pills (i.e. Chantix). Each of these treatment options range in effectiveness, cost, and insurance coverage and are considered first-line medications by the tobacco treatment clinical guidelines, which translates to having an established empirical evidence of effectiveness [3]. Pharmacological treatments such as the nicotine patch, nicotine gum, and nicotine lozenge are available over-the-counter within the USA but only to individuals ages 18 and over. However, such products can be and are obtained by those under 18, either from friends, family, or doctor prescription [5,6]. Additionally, cessation medications bupropion SR, varenicline, nicotine nasal spray, and inhaler are available with prescription.

There is mixed evidence among pharmacological interventions, possibly due to low recruitment and high attrition

leading to underpowered studies [7]. Some studies show pharmacological treatments may be helpful for adolescents looking to quit [8,9], while others report limited success with NRT [10,11]. Pharmacological treatments for smoking cessation can improve the odds of successfully quitting by 50-70% [3,12,13]. NRT is widely used and recommended for adult smoking cessation [3], and is considered the most effective strategy for quitting when combined with behavioral support [14].

Pharmacists, with training in therapeutics and experience dispensing medication, offer a unique perspective. While doctors often prescribe such medications, pharmacists may have greater observational cessation experience through providing education alongside medications. Potential for interaction between pharmacists and adolescent smokers occurs in several settings, including when youth are obtaining other prescriptions or if youth are seeking out tobacco or cessation products. Past research with adolescents and pharmacists in school settings found positive changes in anti-tobacco knowledge [15]. Additionally, trends for health education [16-18], vaccinations [19], and smoking cessation efforts in pharmacies [20], suggest pharmacists may be an untapped resource for adolescent cessation education. Furthermore, pharmacist advice or recommendation may play a role in adolescents using pharmacological treatments for smoking cessation. Given the potential for pharmacist cessation advice, this study aimed to address the question: what do pharmacists recommend for adolescent smoking cessation?

MATERIALS AND METHODS

Delphi overview

A three-round Delphi technique was used to intensively survey a panel of pharmacists experienced with adolescent cessation. The technique has been used in medical and health services research and is suitable for problems when there is insufficient evidence [21]. Devised in the early 1950s to obtain feedback from experts, the Delphi technique is a systematic approach to garner group consensus while minimizing social bias [22]. Delphi study participants never meet face-to-face which provides a sense of anonymity and minimizes the influence of dominant individuals [21].

The Delphi technique combines qualitative and quantitative methodologies, beginning with open-ended items within the first round and closed-ended survey items within subsequent rounds. Successive questionnaires give participants feedback on the collective responses of the group and allow subjects to modify responses. Throughout, the process builds on the qualitative responses of the experts and measures the collective response quantitatively [21]. As such, data collected provide a wealth of information.

Recruitment

USA State Board of Pharmacy directors were contacted between May 18 and June 1, 2015, by email, and asked to share with their members a brief overview of the study and the screening survey link. Director emails were obtained from the National Association Boards of Pharmacy website [23]. Of the 50 USA states and District of Columbia listed, all but three (Alabama, Connecticut, and Tennessee) had email contacts; therefore, the

directors from 47 states and District of Columbia were contacted via up to two emails over a period of two weeks. Of the 47 directors contacted, four (Hawaii, Kentucky, Oklahoma, and Wyoming) responded saying they would share the information, four (Indiana, Texas, Virginia, and Vermont) provided contact lists for their members, one (Massachusetts) email link was inactive, 28 did not respond, and 11 responded saying they were not able to forward the information. Of the 11 state directors who would not share the information, four (Louisiana, Nebraska, Pennsylvania, and South Carolina) offered a contact list for purchase, and four (West Virginia, Missouri, New York, and Kansas) said there was no list available.

To increase the likelihood of quality responses and ensure a diverse expert panel, a brief screening tool requesting information on pharmaceutical background and experience treating adolescent smokers was administered to all interested pharmacists. The screener asked potential panel members about their work setting (e.g. retail, hospital, or research), number of years practicing, and experience with adolescent smokers.

The literature varies regarding ideal sample size for a Delphi study, with recommendations for between 20 and 100 participants. Larger samples increase validity, but too large of a sample can be time intensive, thus delaying the ability to develop and distribute the second and third rounds of the study [22]. Based on literature recommendations and feasibility, the goal for the current study was to have 30 pharmacists complete Round 3. Within one week of recruitment, 312 pharmacists completed the screening survey. All responses to the screening survey were first reviewed for whether pharmacists had previous experience working with adolescent smoking cessation. Sixty-seven (21.5%) pharmacists reported minimal or no experience with adolescent cessation, while an additional 8 (2.6%) provided unclear responses. From the remaining 237 pharmacists, 50 pharmacists were invited to participate, selected using stratified random sampling based on years of pharmaceutical experience and employment sector. Because only those who completed the previous round were invited to participate in subsequent rounds, 50 participants were invited in order to obtain a final sample of 30 pharmacists.

Procedure

All surveys were conducted via Qualtrics® online software. Participants were provided the following phrase at the start of each survey to clarify the target population of adolescents: "The following items pertain to teen or adolescent smoking. In this context, teen/adolescent refers specifically to an individual under the age of 18." Participants were given two weeks to complete each survey, with two weeks between each survey for analyses and received a \$50 gift card after completing the final round.

Round 1: In Round 1, participants responded to an open-ended item on recommendations for adolescent smoking cessation: "What would you recommend for a teen looking to quit smoking?" All responses were compiled and categorized by two independent researchers. Any discrepancies were resolved by a third researcher.

Round 2: In Round 2, participants who completed Round 1 were asked how likely they were to recommend each treatment

identified in Round 1 using a 7-point Likert scale (1 = Very Unlikely to 7 = Very Likely). Pharmacists were also asked two items pertaining to tailoring their recommendations, specifically, whether they were likely to recommend based on adolescent age and adolescent smoking history.

Round 3: In Round 3, each participant who completed Round 2 was provided a personalized survey link which contained his/her response alongside the group median and mode from the previous round for each recommendation. Because the objective was to determine group consensus, participants were asked to retain or alter their recommendations and encouraged to provide commentary as warranted.

Medians and interquartile ranges (IQR) were calculated to determine consensus. Consensus to recommend was established for recommendations which received an IQR of 1 and median rating of at least 6 (Likely to recommend). Qualitative responses were coded independently by two authors. Any discrepancies were discussed, with all final codes agreed upon by both coders.

A final question was added to Round 3 based on Round 2 responses. All pharmacists were asked "Is there a particular Smoking Cessation Program you would recommend?" in order to identify pharmacist awareness of available programs.

RESULTS AND DISCUSSION

Sample characteristics

Of the 50 pharmacists invited to participate, 40 (80% of invited) completed Round 1, 37 (92.5% of invited) completed Rounds 2, and 37 (100% of invited) completed Round 3. The majority of participants were male (n=23, 62.2%) and White (n=31, 83.8%), while some identified as African American (n=4, 10.8%), American Indian (n=1, 2.7%), or Asian (n=1, 2.7%). Participants resided in 14 states: Alabama (n=2), Arizona (n=18), Florida (n=2), Idaho (n=1), Illinois (n=1), Iowa (n=1), Kentucky (n=3), Kansas (n=1), Michigan (n=1), Ohio (n=1), Pennsylvania (n=2), Tennessee (n=1), Texas (n=1), Utah (n=1), and Washington (n=1). Pharmaceutical experience ranged from three to 48 years, with on average 19.75 years. Participants worked in both retail (56.7%) and hospital (43.2%) pharmacies. Participants were asked whether they had been approached by adolescents seeking NRT and which products adolescents had requested (if any). Of the 37 respondents to complete all three rounds of the study, 17 (45.9%) responded they had been approached directly by an adolescent. Of those, 15 (88.2%) said adolescents requested nicotine patches, 14 (82.4%) said nicotine gum, 3 (17.6%) said nicotine lozenges, 2 (11.8%) said nicotine inhalers, and 1 (5.9%) said e-cigarettes.

Round 1: Forty respondents provided 10 different responses for the item "What would you recommend for a teen looking to quit smoking?" Thirty-six (90%) of those responses included an over-the-counter NRT product (patch, gum, or lozenge). Nicotine patch and gum were each listed by 23 (57.5%) pharmacists. Nicotine lozenges, counseling, behavioral approaches (e.g. identifying triggers and counting strategies), and smoking cessation programs were each listed by 3 (7.5%) pharmacists. Varenicline, bupropion SR, quitline, and cold turkey were each mentioned by 1 (2.5%) pharmacist. Additionally, 5 (12.5%)

pharmacists stated their recommendation would be tailored for age or smoking history.

Thus, 10 recommendations were identified through Round 1: nicotine patch, nicotine gum, nicotine lozenge, bupropion SR, varenicline, quitline, smoking cessation program, counseling, behavioral approaches, and cold turkey. Smoking cessation program refers to a structured quitting program, typically in a group setting, while counseling refers to individualized guidance, either formal or not. Behavioral approaches refer to strategies such as chewing on a peppermint stick or counting to ten.

Round 2: Thirty-seven pharmacists completed Round 2. Pharmacists were very likely to recommend smoking cessation programs (median=7 of 7, IQR=1), likely to recommend behavioral approaches (median=6, IQR=2), counseling (median=6, IQR=2), quitline (median=6, IQR=3), and nicotine patch (median=6, IQR=3); somewhat likely to recommend nicotine gum (median=5, IQR=2) and nicotine lozenge (median=5, IQR=3), and somewhat unlikely to recommend varenicline (median=3, IQR=3), bupropion SR (median=3, IQR=3), and cold turkey (median=3, IQR=4). Pharmacists were likely to base recommendations on age (median=6, IQR=1) and smoking level (median=6, IQR=1) of adolescent.

Round 3: Of the 10 recommendations identified in Round 1, only smoking cessation program met the predetermined criteria for consensus to recommend, with an IQR of 1, and median score greater than 5. Of 37 respondents, 30 (81.1%) were likely or very likely to recommend a smoking cessation program. Remaining recommendations are in Table 1. The only other item which reached consensus was nicotine gum (median=5, IQR=1), which pharmacists were somewhat likely to recommend. Pharmacists were likely to recommend behavioral approaches (median=6, IQR=2), counseling (median=6, IQR=2), quitline (median=6, IQR=3), and nicotine patch (median=6, IQR=3); somewhat likely to recommend nicotine lozenge (median=5, IQR=2), and somewhat unlikely to recommend varenicline (median=3, IQR=2), bupropion SR (median=3, IQR=3), and cold turkey (median=3, IQR=4). There were 26 (7.0%) response changes between rounds 2 and 3; however, median response scores did not change between rounds.

Based on the increased preference in Round 2 for recommending smoking cessation programs, pharmacists in Round 3 were asked to list a smoking cessation program they would recommend. Of the 37 respondents, nine responded, and only one listed a smoking cessation program. Other pharmacists responded with cold turkey or quitline which were both other recommendations and not smoking cessation programs.

Qualitative responses

Participants were given space to provide justifications for their responses in each round. Participants were not required to provide comments, but 40% of pharmacists provided a comment on at least one recommendation (Table 2). Pharmacists provided several common reasons for their recommendations including product effectiveness (n=13), cost (n=7), relevance for adolescents (n=7), accessibility (n=6), and concerns about side effects (n=15). The qualitative responses provided insight into some participants' recommendations. For example, varenicline

Table 1: Round 2 and Round 3 likelihood counts by recommendation.

		Very Unlikely (1)	Unlikely (2)	Somewhat Unlikely (3)	Undecided (4)	Somewhat Likely (5)	Likely (6)	Very Likely (7)
Nicotine Patch	R2	2	5	2	2	5	17	4
	R3	2	4	3	1	7	16	4
Nicotine Gum	R2	3	3	2	1	11	10	7
	R3	2	3	2	0	13	12	5
Nicotine Lozenge	R2	3	4	3	5	12	8	2
	R3	3	4	4	5	13	7	1
Bupropion SR	R2	4	9	7	3	10	3	1
	R3	4	8	8	3	11	2	1
Varenicline	R2	8	9	5	4	3	5	3
	R3	8	10	7	4	3	2	3
Cold Turkey	R2	9	6	6	4	6	3	3
	R3	9	6	7	4	5	3	3
Quitline	R2	0	2	3	5	6	6	15
	R3	0	2	3	4	6	8	14
Counseling	R2	1	1	4	2	6	9	14
	R3	1	2	3	0	9	9	13
Smoking Cessation Program	R2	0	0	4	1	3	7	22
	R3	0	0	3	1	3	8	22
Behavioral Approach	R2	1	0	2	2	5	10	17
	R3	1	0	2	1	6	10	17

Abbreviations: Bold print indicates change between R2 and R3. R2: Round 2; R3: Round 3

Table 2: Qualitative themes by product.

Product	Number of Commenters	Comments per Code
Nicotine Patch	19	5 said effective, 3 said their responses were similar to group response, 3 based on personal experience, 3 said safe, 3 said not the best option, 2 were positive but vague, 2 said easy to use, 2 said not relevant for adolescents, 1 was concerned about side effects, 1 said accessible, 1 said inexpensive
Nicotine Gum	19	3 said not the best option, 3 said their responses were similar to group response, 3 said good for oral substitution, 3 were positive but vague, 2 based on personal experience, 2 said easy to use, 1 said safe, 1 said effective, 1 said not effective, 1 said relevant for adolescents, 1 said accessible, 1 said abuse potential
Nicotine Lozenge	10	2 said not the best option, 2 said good for oral substitution, 1 was positive but vague, 1 said their response was similar to group response, 1 said not effective, 1 said lack of knowledge, 1 said stigma, 1 said abuse potential
Bupropion SR	13	6 were concerned about side effects, 2 said not the best option, 2 said their responses were similar to group response, 2 based on personal experience, 1 was positive but vague, 1 was negative but vague, 1 said expensive, 1 said not accessible
Varenicline	13	8 were concerned about side effects, 2 said not the best option, 2 said their responses were similar to group response, 1 based on personal experience, 1 was negative but vague, 1 said expensive, 1 said not accessible
Cold Turkey	11	3 said not effective, 2 were positive but vague, 2 were negative but vague, 1 said not the best option, 1 said safe, 1 said lack of knowledge, 1 said relevant for adolescents
Quitline	13	5 were positive but vague, 3 said not the best option, 2 said inexpensive, 1 said safe, 1 said lack of knowledge, 1 said accessible, 1 said confidential
Counseling	10	4 were positive but vague, 2 said not the best option, 2 based on personal experience, 1 said safe, 1 said not relevant for adolescents, 1 said expensive, 1 said not accessible
Smoking Cessation Program	12	3 were positive but vague, 2 based on personal experience, 1 said their response was similar to group response, 1 said safe, 1 said effective, 1 said easy to use, 1 said lack of knowledge, 1 said relevant for adolescents, 1 said stigma
Behavioral Approaches	7	3 were positive but vague, 1 said their response was similar to group response, 1 said safe, 1 said effective, 1 said relevant for adolescents, 1 said inexpensive

and cold turkey received the greatest number of very unlikely to recommend scores. The comments for varenicline indicate pharmacists were concerned about the side effects. However, reasons for recommending or not recommending cold turkey were less clear.

CONCLUSION

The purpose of this study was to reach consensus on recommendations for adolescent smoking cessation among pharmacists. Through a three-round Delphi study, pharmacists stated and rated their most likely recommendations for adolescents looking to quit smoking. In the final round, only smoking cessation program reached consensus for recommending.

In Round 1, pharmacists were overwhelmingly in favor of NRT options, with only 25% mentioning anything behaviorally related. However, in Round 2 and Round 3, pharmacists were between somewhat unlikely and somewhat likely to recommend the over-the-counter NRT options, and most likely to recommend behavioral options. There are several likely explanations for this: (1) pharmacists may have felt limited to answers only about medications; (2) pharmacists may have only been approached about medication options for cessation and therefore more likely to recommend, or (3) pharmacists may not be aware of tobacco cessation resources within their community. As indicated in the screening survey results, pharmacists were most likely approached for NRT products, which may have influenced their recommendations. Additionally, as evidenced by only one person listing a smoking cessation program, while the pharmacists responded as likely to recommend the smoking cessation program, it is possible they are not aware of programs, which may have influenced their initial response, and also limits the usability.

In the USA, NRT is currently restricted to use among those 18 years of age or older. As the pharmacists in this study were directed to respond based on likelihood of recommending for those under 18, some may have been concerned with the legality of such recommendations. However, none referenced legal restrictions as a reason for recommending or not recommending any treatments. Nevertheless, it is possible current regulations which require prescription for use under 18 influenced some pharmacists' recommendations. Additionally, the recommendations identified by this sample of pharmacists are consistent with current Clinical Practice Guideline [3], though none referenced that as a reason for selecting any treatment.

There were notable cessation treatment options that were not recommended within Round 1, and subsequently not discussed within this survey, including the nicotine inhaler, nicotine nasal spray, and e-cigarettes. The nicotine inhaler and e-cigarettes were items for which adolescents had previously approached the pharmacists within this sample, however, they were not listed as recommendations by pharmacists in Round 1, and, therefore, not included throughout the survey. The nicotine inhaler and nicotine nasal spray are less prevalent among adults, and, therefore, may be less familiar to pharmacists. The nicotine nasal spray was found ineffective among one sample of adolescents [24], but no studies have looked at use of nicotine inhaler. Despite

being the most commonly used tobacco product within the USA among adolescents, e-cigarettes are not considered a cessation treatment within the USA [25], which may be why pharmacists did not recommend it as such. However, there is some evidence young people may use electronic cigarettes for cessation (26), and, therefore, this should be considered within future studies.

This study contained a number of strengths, as well as limitations. There were high response rates between Rounds 1 and 3, with all respondents from Round 2 completing Round 3. Another strength is the abundance of qualitative feedback. Nearly half of participants voluntarily submitted qualitative feedback which provided insight into responses. The first limitation pertains to generalizability. The number of pharmacists was necessarily limited, and, as such, the findings may not be generalizable. Additionally, each of the participants had experience with adolescent substance use, which may not represent all pharmacists. Second, we failed to operationalize the term 'cold turkey'. Recent literature indicates the use of the term varies. For example, a 2016 study cites 'cold turkey' as the best approach for smoking cessation [27]. However, this usage of the term does not refer to completely quitting smoking without any assistance (as was intended by the authors of the current study). Instead refers to choosing a quit date and stopping smoking completely as opposed to tapering down, while using NRT or behavioral treatment. Therefore, future research should clarify individual interpretations of 'cold turkey'.

Despite these limitations, this study identified pharmacist recommendations for adolescent smoking cessation. Results indicate pharmacists favored behavioral treatments over pharmacological interventions in this patient population, which is in agreement with current clinical practice guideline (3). However, as indicated in this study, pharmacists may not be familiar with specific behavioral treatments. Such preferences and knowledge among pharmacists could influence the accessibility of treatment to adolescent smokers. Future research should address the possibility of pharmacy-based services for tobacco cessation, including continuing education for pharmacists on adolescent tobacco cessation resources. In studies among adults, pharmacists [28], and patients [29], reported interest in pharmacy-based cessation. Additionally, qualitative feedbacks from pharmacists within this sample indicate an interest in helping youth quit smoking.

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