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Dental Hygiene Workforce Issues: A Minnesota Study

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Purpose. This study was designed to explore the prevalence and reasons for withdrawal from the dental hygiene workforce. The study also assessed the reasons for maintaining an active license after withdrawal, and the factors that might entice an individual to return to the dental hygiene workforce.

Methods. A random sample was selected of dental hygienists licensed in Minnesota from the November 2003 State Board of Dentistry's dental hygiene licensing file. Data was collected from a mailed questionnaire containing 45 open-ended and close-ended questions. The final sample included 2672 dental hygienists actively licensed and residing in Minnesota. One thousand four hundred and twenty responded to the survey, for a response rate of 53%. From that sample, 129 participants indicated that they were licensed to practice in Minnesota but were not currently working (had withdrawn from the workforce). This study focuses on the responses of those 129 individuals.

Results. The prevalence of withdrawal was 9%, with the majority of the participants indicating that they did not plan to return to the dental hygiene workforce. The primary reason for withdrawal was child-rearing responsibilities, followed by health-related reasons, and pursuing a different career. A key difference between those who were active participants in the workforce and those who had withdrawn was related to income. The results of this study found that financial difficulties, death/disability of a spouse, and having older children were the primary factors that would entice a respondent to return as an active participant to the dental hygiene workforce.

Conclusion. This study suggests that dental hygiene workforce issues are of great complexity and are multifactorial in nature. The findings tend to confirm the results of previous work. It can be concluded that because of the nature of the work and the demands of the profession, it is likely that movement in and out of the dental hygiene workforce will continue to be an issue in the profession.

Keywords: Attrition, workforce issues, career change, reentry into the workforce, dental hygiene workforce

Introduction

For many years, dental hygienists have had an integral role in the promotion of oral health, wellness, and disease prevention. According to the US Department of Labor, Bureau of Labor Statistics, dental hygienists held about 148 000 jobs in the United States in 2002.[1] However, due to the fact that holding multiple positions is common, the number of jobs tends to exceed the number of dental hygienists.[1] More than one-half of all dental hygienists work part time, which is defined as

less than 35 hours a week.[1] In addition, the dental hygiene profession is projected to grow much faster than the average for all occupations through the year 2012.[1]

Currently, on both the state and national levels, dental hygiene is a profession that is in transition and is facing a variety of workforce challenges. For example, there have been several recent legislative changes in Minnesota in relation to the dental hygiene profession. Such changes include the ability to work in alternative practice settings, collaborative agreement practice, expanded restorative functions that include placing and carving restorative materials (amalgam, glass ionomer, stainless steel crowns, and composite), and placing pit and fissure sealants without approval and supervision by a licensed dentist. It is possible that these changes could aid in increasing access to dental care. With such progressive changes underway, it is an appropriate time to examine the current dental hygiene workforce in Minnesota. The results described in the following manuscript are drawn from a larger study that was conducted to examine dental hygiene workforce issues. One segment of the workforce that needs additional study is the individuals who retain an active dental hygiene license but have withdrawn from the workforce.

It is important to assert that the productivity of the dental hygiene workforce is a function of various factors, such as the number of years clinical dental hygienists actively participate in the workforce. It can be assumed that some dental hygienists leave the workforce for a period of time while still retaining an active license. Because they leave the workforce for unspecified periods of time, their career productivity diminishes. If the numbers are significant, the ability of the dental hygiene workforce to deliver oral health care could be overestimated. In an effort to explore this matter, a workforce study was undertaken with a specific focus on dental hygienists with active licenses who have withdrawn from the workforce.

The study examines the following: the prevalence of withdrawal from the dental hygiene workforce; the key differences that exist between those who are active participants in the dental hygiene workforce and those who have withdrawn; the effect that spouse's occupation, income, and educational attainment have on an individual withdrawing from the workforce; the reasons for withdrawal; plans, if any, to return as active participants to the workforce; the reasons why individuals who have withdrawn from the workforce maintain an active license; and the factors that might entice them to return to the workforce.

Review of the Literature

A review of the literature indicates that there has been a considerable amount of research conducted on dental hygiene workforce issues in the United States. When looking at productivity, the literature addresses several issues, including withdrawal from the workforce and the factors that contribute to its occurrence.

The dental hygiene workforce is comprised mostly of married female professionals, with the vast majority having children.[2-14,18,20] According to some studies, the majority of dental hygienists tend to be under the age of 40.[6,7,11,13] A study published in 1978 supports the notion that dental hygienists tend to be positioned in the upper portion of the socioeconomic community.[11] The greater part of the profession have earned an associate degree, although a significant number hold bachelor's degrees.[2-4,6,9,10,12-17,20] Approximately 25% of dental hygienists have a bachelor's degree, yet few have a master's or doctoral degree.[2,4,9,12,14,15,17]

Most licensed dental hygienists are actively employed in clinical practice settings-the majority in solo and group practices.[2-4,6-12,15,18] Of those who are employed in clinical practice, a large number work in one practice.[9,10] The average number of years employed in the profession varies greatly from approximately 6 years to 16 years.[2,5,6,10,14,15] Turbyne et al reported that dental hygienists work on average between 34 and 40 hours per week, which differs from the US Department of Labor, Bureau of Labor Statistics findings that reported >50% working 35 hours or less.[1,10]

While most dental hygienists are employed in the profession, some are not. There are several studies that address why dental hygienists are not employed within the dental hygiene workforce.[2,4,5,6,8,15,17,20,22] Such reasons include family responsibilities, continuing formal education, dissatisfaction with dental hygiene (work conditions, work itself), licensure (waiting to take licensure exam, moving soon so will not bother, failed boards, and no license), looking for dental hygiene

work, employed in other work, health reasons, and personal reasons.[17] One study indicated that of the dental hygienists who leave the profession, most do so temporarily.[6] The bulk of dental hygienists leave the profession due to family/child-rearing obligations and/or responsibilities.[2,4,5,6,8,15,21,22] Many dental hygienists indicated that they could be enticed or have the intention of returning to the profession.[4,6] Some incentives for reentry include increased salary, increased benefits, improved infection control procedures, increased involvement in setting infection control policies, and more decision-making opportunities.[4]

Some dental hygienists leave the workforce because they are dissatisfied with the profession. One might predict that those who are dissatisfied with the profession are likely to not be employed as a dental hygienist.[3] In addition, it seems that the longer one works as a dental hygienist, the greater the likelihood of being dissatisfied.[16] Limited growth and development, not intellectually stimulating, and too many dental hygienists in the market, are all reasons dental hygienists stated for not recommending the profession to others.[15] Other reasons for career dissatisfaction include boredom, repetition, lack of variety, inadequate salary, lack of benefits (sick and vacation pay, medical insurance coverage, a retirement plan, and continuing education), concerns about infectious disease, lack of decision-making opportunities, physical and emotional demands, little or no opportunity for advancement, physical strain, injury, and/or fatigue.[2,14,19]

When dental hygienists were asked what they thought the profession would offer them, they replied, respectability, an acceptable salary, stability and security, flexibility, and a chance to help others. It is not a surprise that dissatisfied dental hygienists have more negative attitudes toward the profession than those who are satisfied. Some additional reasons dental hygienists are dissatisfied are as follows: lack of respect from dentists and coworkers, monotony, lack of creativity, little mental stimulation, pressure for greater volume of work, lack of time for patient education, and limited benefits. However, it is interesting that both satisfied and dissatisfied dental hygienists criticize the profession for limited career growth, advancement, and legal restrictions.[16]

In 1986, a dental hygiene manpower study was conducted in Tennessee.[5] The study found that 74% of participants surveyed had remained in the profession since graduation and that the average time of licensure was 11.11 years. Of the dental hygienists who left practice permanently, approximately 50% did so due to family demands, while others left due to career dissatisfaction or retirement. A large percentage left the profession temporarily due to family responsibilities. One hundred percent of the dental hygienists who left practice, either permanently or temporarily, retained their Tennessee license. Within the sample, 80% of the respondents were married, 8% divorced, 8% widowed, and 4% single. Changes in work hours were experienced by 67% of the practicing dental hygienists. Reasons cited included family responsibilities, a decrease in patient load, return to school, decrease in financial demands, decrease in job availability, community activities, health-related disability, death of a dentist, and hours reduced by the employer.[5]

A career retention study was conducted in Texas in 1999. The results revealed that the primary reasons for leaving dental hygiene practice were family responsibilities, boredom, salary, and lack of benefits. Respondents who remained in practice were more likely to have a certificate or associate degree, were unmarried, had fewer children, and were younger than those who had withdrawn from the workforce. The authors concluded that the individuals who remain in clinical practice are positively influenced by the salary.[22]

Several manpower studies have been published in countries other than the United States.[23-25] Many of these studies revealed the same issues concerning the dental hygiene workforce as those that have been conducted in the United States. Similar to the United States, dental hygienists tend to be female, work in general dental practices, and enjoy a level of satisfaction with the profession.[23-25] Dental hygienists tend to leave the profession for reasons largely related to child-rearing responsibilities. 23,24 However, many dental hygienists indicated that they had plans to return to the profession.[23,24]

Overall, the research on this subject is extensive, but there are also noteworthy gaps in the literature. First, it does not contain a great deal of information about spouses' occupation, income, and educational attainment. It is known that females are more likely than males to withdraw from the workforce for periods of time, and that the majority of dental hygienists are female.[2,4,9],-[14] Withdrawal from the workforce could be contingent on spouse's income. This is important to know

because a temporary or permanent leave from the dental hygiene workforce tends to diminish career productivity and longevity. A 1979 study found that many dental hygienists were married to people in professional and technical professions, followed by managers and administrators, salesmen, and craftsmen.9 In addition, 2 studies in the 1970s found that many dental hygienists were married to dentists.[9],

Second, few studies have explored the question of why dental hygienists maintain an active license after withdrawing from the workforce. This is important because it is possible that these individuals could be enticed to reenter the profession. Or, it is possible that some individuals use their license for "in case" reasons, such as the death of a spouse or a divorce. It is imperative to note that maintaining an active license serves to mislead researchers when they look at the numbers of individuals in the dental hygiene workforce.

Third, the literature does not explore the issue of dental hygienists who leave practice and then reenter. It is important to know what their plans are, if any, to return as active participants to the workforce. It would be of great value to know the average amount of time a dental hygienist might withdraw from the workforce before returning for workforce planning.

Fourth, if a dental hygienist leaves the profession entirely, what are they pursuing? One study found that 6% were working toward additional degrees.[11] Of the dental hygienists surveyed, some had purused professional programs such as business, dentistry, and law.[11] Again, if a significant number of dental hygienists withdraw from the workforce to pursue other endeavors, it is virtually certain that productivity would be greatly impacted.

This study focused on questions related to Minnesota dental hygienists who have withdrawn from the workforce. In particular, it focuses on spouse's occupation, income, and educational attainment; why nonactive participants maintain an active license; the plans of the individual, if any, to return as active members to the workforce; and what those individuals are doing who have left the profession permanently.

Methodology

A group of Minnesota dental hygienists were identified who had maintained an active license and were residing in the state in November 2003 (n=3562). From that subset, a 75% random sample was drawn. The final sample included 2672 dental hygienists actively licensed and residing in Minnesota; 1420 responded to the survey, for a response rate of 53%. This study focused specifically on a subset of the 1420 respondents. The subset included 129 dental hygienists who had withdrawn from the dental hygiene workforce but maintained an active license.

Data were collected from a questionnaire containing 45 open-ended and close-ended questions. The questionnaire was developed by the authors, pilot tested, and revised. The pilot test was conducted by 5 clinical dental hygienists and 5 dental hygiene educators. Institutional Review Board (IRB) approval was obtained from the University of Minnesota.

The questionnaires, along with a cover letter, were mailed to 129 dental hygienists with a postage-paid return envelope. The cover letter explained the purpose of the study, the importance of the subject's participation, and that the subject's participation was voluntary. The letter addressed confidentiality issues and the appropriate time it would take to complete the questionnaire (20 minutes). In addition, it provided the contact information of the investigators.

A follow-up postcard was mailed to the nonresponders approximately 4 weeks after the first mailing. Also, the researcher's contact information was printed on the postcard to facilitate requests for a second copy of the questionnaire. Questions focused on the following areas:

1. Demographic information of dental hygienist and spouse (if applicable).
2. Current professional status.
3. Reasons for leaving the workforce.
4. Reentry considerations.

The entries to each question were coded, entered, and analyzed in Microsoft Excel®. The researchers used Microsoft Excel® to analyze all of the data and descriptive methods were utilized. This study investigated a small subset of the data

collected for a larger project. Because so little is known about the individuals that withdrawal from the dental hygiene workforce, inferential analysis was delayed until the present data could be viewed in the context of the larger data set. Doing so may allow us to present a more coherent and complete picture of the decisions dental hygienists make over the span of their careers.

Results

There were 9.08% of the subjects who had indicated that they dropped out of the workforce for a variety of reasons. Because not all of the 129 respondents answered each of the questions, the number of responses to individual questions varied.

Demographic Information of the Participant

The demographic data included the year the participant completed their dental hygiene education, the highest academic degree achieved, the year they were born, marital status, and the number of children living in their household. Working and nonworking participant categorical demographic data is summarized in Table I.

Table I.
Demographics Chart
Active Participants versus Nonactive Participants

Actively Participating in Dental Hygiene Workforce (N=1291)		**Not Actively Participating in Dental Hygiene Workforce (N=129)**	
Average Age:	40.38	**Average Age:**	46.27
Average Year Completed Education:	1988	**Average Year Completed Education:**	1980
Highest Degree Obtained:		**Highest Degree Obtained:**	
Associate Degree	69%	Associate Degree	53%
Bachelor's Degree	29%	Bachelor's Degree	41%
Master's Degree	2%	Master's Degree	5%
Doctoral Degree	1%	Doctoral Degree	2%
Children in Household:		**Children in Household:**	
Do Not Have Children	37%	Do Not Have Children	33%
Under Age 5	23%	Under Age 5	28%
Ages 5-12	24%	Ages 5-12	26%
Ages 13-18	28%	Ages 13-18	22%
Over Age 18	11%	Over Age 18	16%
Marital Status:		**Marital Status:**	
Single (Never Married)	11%	Single (Never Married)	1%
Married	79%	Married	88%
Divorced	9%	Divorced	9%
Widowed	1%	Widowed	2%

The mean age of the participants who had withdrawn from the dental hygiene workforce was 46.27 years old and had completed their dental hygiene education between 1940 and 2001 (mean=1980). Mean age for the working group was 40.38 years old and had completed their education between 1942 and 2003 (mean=1988). Many of the subjects in both groups held associate degrees; however, it is important to note that several held bachelor's degrees, while a few held

master's and doctoral degrees. The educational attainment of the individuals who have withdrawn was higher than the participants who were actively working in the profession. The majority in both groups were married, however, more participants in the working group were single as compared to the nonworking group. Both groups included a similar number of participants who were divorced or widowed.

When asked if they had children living in the home, 67% of nonworking and 63% of working dental hygienists responded to the affirmative. The respondents were also asked to indicate the number of children living within the household in each age category.

Information related to spouse's demographics is presented in Table II. Nonworking participants tended to be married to individuals that were more highly educated. In addition, 23% of nonworking participants indicated that their spouses earned between < $10 000 and $49 000, while 77% earned between $50 000 and $200 000 or more, annually (Table II). The active participants indicated that 38% of their spouses earned between < $10,000 and $49,000, while 63% earned between $50 000 and $200 000 or more, annually (Table II). Forty-one percent of nonworking dental hygienists had spouses who earned between $100 000 and ? $200 000, annually. Eighteen percent of working dental hygienists had spouses that earned between < $100 000 and ? $200 000, annually. Those individuals in both groups in the less than $10 000 category were mostly retired, although a few were unemployed, stay at home parents, and students.

Table 2
Spouse's Demographics Chart
Active Participants versus Nonactive Participants

Actively Participating in Dental Hygiene Workforce (N=1291)		**Not Actively Participating in Dental Hygiene Workforce (N=129)**	
Highest Degree Obtained by Spouse:		**Highest Degree Obtained by Spouse:**	
No Formal Education	21%	No Formal Education	12%
Associate Degree	27%	Associate Degree	18%
Bachelor's Degree	32%	Bachelor's Degree	38%
Master's Degree	12%	Master's Degree	13%
Doctoral Degree	8%	Doctoral Degree	19%
Spouse's Income:		**Spouse's Income:**	
Less than $10,000	2%	Less than $10,000	7%
$10,000-$14,999	1%	$10,000-$14,999	0%
$15,000-$24,999	4%	$15,000-$24,999	2%
$25,000-$34,999	10%	$25,000-$34,999	5%
$35,000-$49,999	21%	$35,000-$49,999	9%
$50,000-$74,999	30%	$50,000-$74,999	19%
$75,000-$99,999	15%	$75,000-$99,999	17%
$100,000-$149,999	12%	$100,000-$149,999	18%
$150,000-$199,999	3%	$150,000-$199,999	8%
$200,000 or more	3%	$200,000 or more	15%

Spouses' occupations were categorized based on the US Department of Labor, Bureau of Labor Statistics job classifications, which contains 22 categories. Each category included detailed examples of the occupations they represented. Two additional categories were added to better categorize some of the individuals. The first category was business owner and self employed. The second category was retired, unemployed, student, and stay at home spouse.

Some respondents did not give a detailed description of their spouse's occupation; therefore, these responses were categorized based on the best possible fit. This was also true for the occupations that were not found in the Bureau of Labor Statistics categories. For example, many subjects indicated that their spouse's occupation was management, while others gave a detailed description (eg, chief executive officer for a major bank). Because of these responses, all management positions, regardless of level, were classified in the management occupations category. Another example was classifying a mortician. Mortuary science was not found in any of the Bureau of Labor Statistics categories; therefore, an educated estimate was made and this profession was placed in the life, physical, and social sciences occupations category.

Nonworking dental hygienists tended to be married to spouses from the following categories: management occupations (19%), healthcare practitioner and technical occupations (17%), business owner/self employed (11%), and retired, unemployed, student, and stay-at-home spouse (11%). All spouses who were not working were retired.

The participants active in the dental hygiene workforce tended to be married to spouses working in the following categories: management occupations (17%), construction and extraction occupations (9%), sales and related occupations (8%), and health care practitioner and technical occupations (8%).

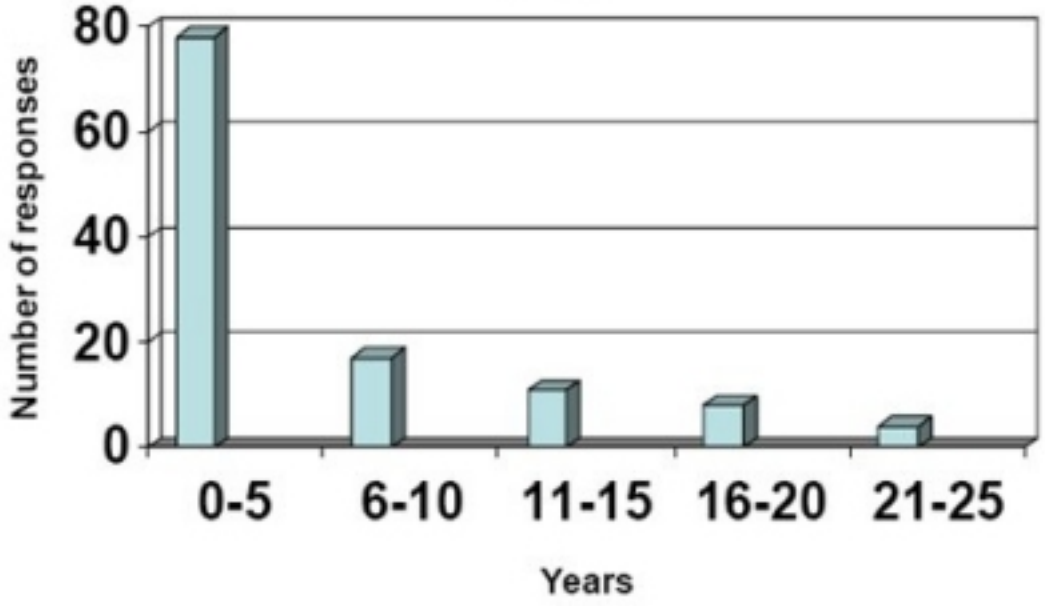
Current Professional Status

Several nonworking participants (n=11) indicated that they were not employed as dental hygienists but were currently seeking dental hygiene positions. Most of the respondents were looking for part-time positions, one was looking for a full-time position, and 2 specified that they would accept either full-time or part-time work. Of those seeking part-time positions, most were doing so due to child-rearing responsibilities. Other reasons included getting out of the house, spouse travels for work, and burnout. The respondents had been seeking employment anywhere from one week to one year.

All of the individuals responded that they were restricting their job search to a specific geographic region due to having family/children/friends in the area, spouse's employment situation, and because they wished to remain in the area. When asked how far they would be willing to commute to work as a dental hygienist, the mean response was 37.72 miles roundtrip. One hundred and eighteen participants (92%) were not currently working as a dental hygienist and not currently seeking employment in the dental hygiene field.

The nonworking participants were asked how long it had been since they left the dental hygiene workforce. The responses ranged from < 1 year to 25 years (Figure 1). All the participants had worked as a clinical dental hygienist at some time in their career.

Figure 1.
Years out of Dental Hygiene Practice
(N=118)



Nonworking dental hygienists were asked why they ceased working as a dental hygienist. The primary reason was child-rearing responsibilities. Additional reasons cited included health reasons, changed career, other, retired, and income unsatisfactory, respectively. Other reasons cited by respondents included bored or dissatisfied with the profession, poor relations with the dentist, lack of dental hygiene employment opportunities, and caring for others (such as an elderly or ill parent).

When asked why they maintain an active dental hygiene license, the majority indicated it was in case additional income is needed at some point in the future. Other reasons cited were in case spouse is unable to work (n=52), other (n=43), will resume when children are older (n=34), and in case I am unable to find other work (n=34). Loyalty to the profession was added because several participants (n=14) had noted this response in the "other" category. Overall, the "other" responses were as follows: mission/volunteer work, licensure is needed for my current (nonclinical dental hygiene) position, and I fill-in at a dental practice. Many indicated that they plan to resume work as a dental hygienist in the future. However, 5 individuals noted that they would be dropping their licenses at the end of the year.

Respondents were asked if they anticipate reentering the dental hygiene workforce at some point in the future, and if so, when? Forty-two percent indicated that they were planning to return to the dental hygiene workforce, while 58% indicated that they were not planning to return. Of those planning to return to the profession, the average time to reenter was planned as 2.42 years, the standard deviation was 1.98, and the range was 6 months to 10 years.

Of those who did not plan to reenter, the most common reason was child-rearing responsibilities, with 50 total responses. Health reasons was the second most common reason, followed by other, retired, better employment in another field, lack of jobs, and lack of child care, respectively.

Finally, individuals were asked what it would take to get them to reenter the dental hygiene workforce. The participants were asked to check all responses that applied. There were 288 total responses. The most prevalent responses were financial difficulties (65), death/disability of a spouse (50), and having children be older than they are now (42). The next most noted responses were as follows: other (33), divorce (29), job offer at an attractive wage (23), fringe benefits (23), currently looking for a dental hygiene position (8), being healthier (8), and relocating to a different community (7). Some of the most indicated "other" responses included finding a "good" dentist to work for, I would return if something bad happened

in my current career, nothing could get me to return, if other opportunities were available such as independent practice, more skill variety, and/or a nonclinical position became available.

Careers Other Than Dental Hygiene

Many of the subjects indicated that they were not employed in the dental hygiene workforce because they are working in careers other than clinical dental hygiene. Several participants indicated that it was mandatory or they felt it was important to maintain their dental hygiene license in order to work in their current positions. Such positions included: health care research, computer software implementation, dental assisting instructor, sales, consulting, and dental benefits administration. The remaining participants were in careers that did not necessarily require dental hygiene licensure. Positions held by these participants were as follows: flight attendant, writer, artist, dental technician, medical transcriptionist, trainer, real estate, business owner, medical social worker, health information technology, business, procurement manager, paralegal, nurse, researcher, and epidemiology.

Seven participants noted that they were enrolled in academic programs other than dental hygiene. Reasons for this included: being unable to find a position in dental hygiene, physically unable to practice dental hygiene any longer, bored with the profession, underappreciated, and lack of advancement in the field. Some individuals were enrolled in bachelor and doctoral programs.

A comparison was made between those who had temporarily left the dental hygiene workforce and those who had left permanently. Fifty-eight percent (n=66) indicated that they do not anticipate reentering the dental hygiene workforce. These individuals were placed in the Permanently Left Profession category. Forty-two percent (n=48) anticipate reentering the dental hygiene workforce in the future. These participants were placed in the Temporarily Left Profession category.

The subjects were asked how many years it had been since they were last employed as a dental hygienist. Those who had permanently left the dental hygiene workforce had been out of work an average of 7.63 years; those who had left temporarily had been out for an average of 3.07 years. The participants who anticipated returning to the workforce were asked to answer the question, in approximately how many years would you reenter? The mean response was 2.53 years. Fifteen participants did not respond to the questions regarding whether or not they planned to reenter the dental hygiene workforce.

Both groups were asked why they ceased working as a dental hygienist. Those who had left the workforce permanently indicated doing so because of the following: health reasons (26%), child-rearing responsibilities (30%), pursuing a different career (29%), and retired (26%). The individuals that had left the workforce temporarily did so because of the following: health reasons (17%), child rearing responsibilities (75%), pursuing a different career (10%), and retired (0%).

Discussion

The purpose of this research was to determine which factors influence dental hygienists to withdrawal from the dental hygiene workforce and what it would take for them to reenter. This study had a 53% response rate, thus, yielding a sample of 1420 individuals. While similar studies have had an overall higher response rate, few had a sample size as large as this study.[2,3,5,11,15,20,22-24]

Of the 1420 respondents, 129 participants (9%) were not currently employed as a dental hygienist but maintained an active license. The withdrawal rate of 9% in the current study is similar to the findings of Miller's 1990 study, in which the attrition rate was estimated to be between 5% and 10%.[2] A similar study found that of those who leave the workforce, most do so temporarily.[6] The current study found that less than one-half of those who withdrew from the workforce anticipate reentering in the future.

The results of this research yield important demographic information about the individuals who are not active participants in the dental hygiene workforce and also about those who are active participants in the dental hygiene workforce. The individuals who were not active in the dental hygiene workforce tended to be older (on average 6 years older than those in the working group), had completed their dental hygiene education 8 years earlier than the participants in the working group, and held higher degrees. They were more likely to be married, have children, with a number of them having younger

children than those in the working group. It is important to note that several of the nonactive individuals were actually working; however, many of them are pursing careers outside of clinical dental hygiene practice.

The career mobility of dental hygienists with spouses whose occupational status and salary are higher, demonstrates movement out of the labor market. This could be a function of spouse's characteristics rather than of the dental hygienist's individual needs. This study found that the participants who have withdrawn from the workforce are married to spouses whom, on average, have higher incomes and have achieved a higher level of education than those individuals who are active in the workforce. For the nonactive dental hygienists, it was found that nearly one-half of the spouses were employed in occupations in the management, health care, and business owners (or self employed) categories. Respondents who were active in the workforce tended to be married to individuals in occupations such as management, construction and extraction occupations, sales and related occupations, and health care. From the responses generated from the survey, when a spouse is earning a higher income, the licensee is likely to pursue other endeavors. For example, they are able to pursue a career other than dental hygiene and/or return to school to earn a higher degree.

The reasons for withdrawal from the dental hygiene profession were also investigated. The participants who do not plan to return to the workforce had been out from dental hygiene employment longer than those who plan to return. Because of this greater lapse in time, it is likely that those who do not plan to return to the profession actually will not. Many studies have found that child-rearing responsibilities are the primary reason for withdrawing from the workforce.[4-6,8,15,21,22] This finding was confirmed in this study. Child rearing was the most frequently cited reason for not working in dental hygiene by all groups. It is interesting to note that of the respondents who anticipate returning to the workforce, 75% indicated that the withdrawal was due to child-rearing responsibilities, while 30% of those who do not anticipate returning responded the same. Because of this difference, it does not seem that child rearing is a reason for permanently withdrawing from the profession. In addition, the participants who anticipated a return to the workforce indicated, on average, that they would return in 2.53 years.

When the participants were asked why they ceased working as a dental hygienist, the second most noted answer was due to health-related reasons. Therefore, this study supports the literature on this issue. In addition, it might be of value for dental hygiene curriculums to educate students about careers related to dental hygiene, such as dental professional sales, dental hygiene research, and dental hygiene education. Because health-related reasons seem to be an important factor for withdrawal, dental hygienists should be educated on alternative career choices.

Career change was another reason for withdrawing from the dental hygiene workforce. This was found to be true mostly within the population that does not anticipate returning to the workforce. When asked why they ceased working as a dental hygienist, 16% indicated that they were pursuing another career. Some of the individuals noted that maintaining their license was required for their current position, while others indicated that this was not the case. It is important to note that while all withdrawals contribute to the diminishment in dental hygiene clinical practice productivity, many are also contributing to the dental hygiene profession via research, dental hygiene education, consulting, marketing and sales, nonclinical pubic health positions, and dental insurance management. Therefore, their withdrawal should not be considered a detriment to the profession. Dental hygiene educational programs should account for such losses and also educate students about careers related to dental hygiene, which could at some point be considered an alternative to clinical dental hygiene practice.

This leads to the question of why individuals retain an active license to practice dental hygiene. A number of individuals stated that they plan to resume when their children are older. However, more subjects indicated that they were retaining a license as a backup, in case their situation should change in the future. For example, many responded that they retained their license in case additional income is needed, in case spouse is unable to work, or in case they are unable to find other work. Therefore, it is likely that such individuals would not choose to return to the profession unless a major change occurred within their household.

It is possible that some dental hygienists could be enticed to return to the profession if certain conditions were different. One such condition would include a change in their personal life that would require the individual to return to work. Or, an individual might be more likely to be an active participant in the workforce if they felt that they were being sufficiently compensated for their work and/or if the job offered adequate fringe benefits. This is an important finding because it reveals that, while an individual may or may not have withdrawn from the workforce for these reasons, they could be

enticed to return because of them. It would be beneficial for employers of dental hygienists to be aware of this finding in order to entice them to remain working.

Because of the nature of the work and the demands of the profession, it is likely that movement out of the dental hygiene workforce is always going to be an issue. However, according to the US Department of Labor, Bureau of Labor Statistics, dental hygiene employment is expected to grow much faster than the average for all occupations through the year 2012.[1] This projection rests on assumptions about the increasing demand for dental care and the greater utilization of dental hygienists to perform services previously performed by dentists.[1] If such an assumption were true, the way in which people access dental care could change, which in turn, would likely have a great effect on public policy. This effect on public policy would mean that dental hygienists could be responsible for more expanded duties and the workforce would need to be staffed to meet such changes.

Conclusion

While this research only included Minnesota dental hygienists who hold an active license, it did not include individuals who have been licensed and for one reason or another terminated that license. Future research might include studies to determine the reasons for termination, what factors might have changed their decision, and the reasons for their withdrawal from the workforce.

The findings from this study tend to confirm the results of related work. In addition, this study suggests that dental hygiene workforce issues are of great complexity and are multifactorial in nature. This study yielded the following results:

- In general, 9% of dental hygienists in Minnesota withdrew from clinical practice.
- There are key differences between those who are active participants in the workforce and those who have withdrawn.
- Spouse's income is a factor that contributes to withdrawal.
- The primary reason for withdrawal is child-rearing responsibilities, followed by health reasons, and pursuing a different career.
- Most of the individuals indicated that they do not plan to return to the clinical dental hygiene workforce.
- Having financial difficulties, death/disability of a spouse, and having older children were the primary factors that would entice a respondent to return as an active participant to the clinical dental hygiene workforce.

As dental hygiene educational programs plan for future enrollments to meet projected demands, they would be advised to consider the attrition figures identified in this study and to explore and address, to the extent possible, the factors contributing to withdrawal from the dental hygiene workforce.

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Notes

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