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Evaluation of the Knowledge Level of General Dentists of Kerman city about Dental Stem Cells in 2018-2019

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Abstract

***Introduction and objective**:*

There is an obvious need to evaluate the knowledge level of dentists about dental stem cells, as a new technology. Hence, the objective of this study was to evaluate the knowledge level of dentists in Kerman city about dental stem cells during the years 2018-2019.

***Methodology**:*

This descriptive-analytical type of cross-sectional study was conducted on 378 general dentists in Kerman city during the years 2018-2019. Census sampling was used in this study. A researcher-made questionnaire was used to assess knowledge. Pearson correlation, t-test and variance analysis were used to analyze the data. $P < 0.05$ was considered as a significant level.

***Results**:*

The mean score of dentists' knowledge was obtained 13.16 ± 3.55 in this study. There was no significant relationship between the knowledge level of dentists and basic skill and initial place of starting to work ($P = 0.865$ and $P = 0.974$, respectively). However, there was a significant relationship between dentists' level of knowledge and gender, age, history of participation in related seminars, duration of activity (employment history), rate of study of scientific articles and willingness to participate in training courses ($P = 0.008$, $P = 0.008$, $P = 0.0001$, $P = 0.03$, $P = 0.0001$ and $P = 0.0001$, respectively).

***Conclusion**:*

The results of this study showed that dentists' knowledge about dental stem cells is not at the acceptable level and it is possible to enhance the knowledge level and clinical application by providing the necessary resources and trainings.

Keywords: Dentist, Stem Cells, Knowledge.

Introduction

The stem cells have excellent efficiency in the treatment of some diseases and researchers believe that the major clinical work of dentists will be the collection of dental stem cells and the engineering of oral and dental tissues in the near future (1-3). Stem cells are cells with a capability of

self-duplication differentiation into at least two different cell types (3). Self-renewal properties of the stem cells enable them to enter multiple cell division cycles, while they preserve their non-differentiated state and the ability to duplicate and differentiate into several types of mature cells (4). Dentistry has been also affected by developments and progresses in the area of stem cell studies (5). There are especially several dental applications in the area of surgical repair. Given the developments in the 21st century, it is expected that people keep their natural teeth or use applied alternative teeth for the rest of their lives. It is predicted that cellular resources derived from adult tissues to be useful in clinical applications for dental repair. Accordingly, several types of stem cells (mother cells) have been found that have been isolated from dental and non-dental tissues of adults (6). Regenerative dentistry is rapidly developing and it will make restoration and repair of tissues such as alveolar bone, periodontal ligaments, enamel, dentin, and even a complete tooth in the new future. This new technology has atraumatic (with minimum injury) and long-term results and can replace the tissue lost due to cancer or periodontal disease or tissues that were not present since birth due to the congenital disorders (7, 8). However, it has some shortcomings such as the high cost of isolating stem cells, the risk of tumor formation by these cells, the risk of rejecting cultured cells or scaffold by the host immune system, transmission of infection, and the mismatch of the biological properties of cultured tissues with adjacent tissues (7, 9). Although tissue engineering structures play a major role in future dentistry treatments (10), the transfer of this new knowledge from research into practice to the patient requires high-quality research projects as well as close coordination between basic science and dentistry specialists (11, 12). Adequate knowledge and experience are essential to achieve this goal. As a result, the clinicians' knowledge of the different products and their application and following the latest advances in this field are crucial. At the present time, there are limited studies about the dentists' view of tissue engineering (13). Given what was stated above, there is a clear need to evaluate the knowledge level of dentists about dental stem cells, as new technology. Hence, the objective of this study was to evaluate the knowledge level of dentists in Kerman city about dental stem cells in 2018-2019 .

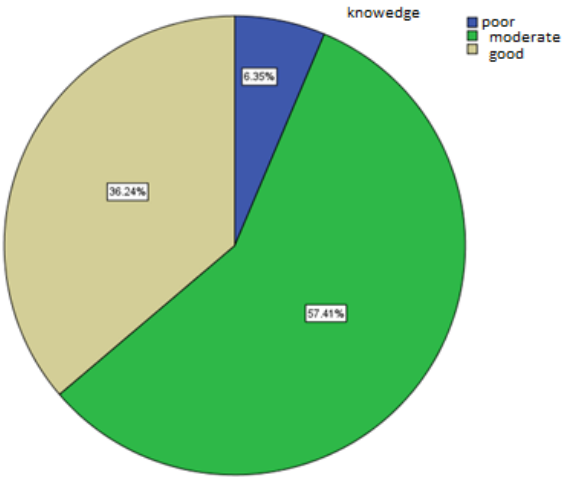
Methodology

This is a descriptive-analytical type of cross-sectional study. The research population included general dentists of Kerman city during the years 2018-2019. In this study, a list of general dentists in Kerman city was obtained by referring to the medical system of Kerman city and all general dentists were examined. Then, the questionnaires were completed by referring directly to the workplace of each of the subjects. The questionnaire used in this study was a researcher-made questionnaire that its questions were collected from similar articles (14). To evaluate the validity of this questionnaire, this questionnaire was distributed to 10 pediatric dentists, oral diseases specialist, restoration specialist, surgeon and oral pathologist, and questions were recognized to be appropriate in terms of content. One question was excluded and 7 questions were reviewed and corrected and its validity was obtained 90%. To evaluate its reliability, the questionnaire was completed by 20 general dentists and it was re-completed by the same dentists after 3 weeks. ICC coefficient was calculated 0.91% that is a desirable level. The knowledge scores ranged from 0 to 22. The scores were classified into three levels of poor, moderate and good. Scores in the range of 0 to 7.33 (0 to 33%) were considered at the poor level, scores in the range of 7.33 to 14.5 (33.1 to 66%) were considered at the moderate level and scores at the range of 14.5 to 22 (66.1 to 100%) were considered at the good level. Data were analyzed by SPSS 21 software. Descriptive statistics of the data were first calculated. Then, Pearson correlation coefficient, t-test, and analysis of variance and linear regression were used for analytical statistics. $P < 0.05$ was considered as a significant level. It should be noted that all the subjects participated in this study voluntarily and they signed the written consent form to participate in the study. In addition, this thesis was proposed at the Ethics Committee of the Research Deputy of Kerman University of Medical Sciences and it was approved by obtaining the ethics code of IR.KMU.REC.1397.122

Results

A total of 378 people were investigated in this study, out of which, 212 (56.1%) were male and 166 (43.9%) were female.

The knowledge level of dentists about the stem cells is shown in Graph 1. As seen, the majority of the dentists had a moderate level of knowledge in this regard (Graph 1)



Graph 1: Classification of knowledge level of dentists about stem cells

The results of this study showed that the knowledge level of dentists was 62.27 ± 16.0% in females and 57.87 ± 16.0% in males, in which the difference was significant (P = 0.008). The level of knowledge based on the participation in the seminar showed a significant difference. The knowledge level was 71.3 ± 14.8% in the subjects who participated in the seminar and it was 57.5%± 4.15% in the subjects who did not participate in the seminar (P = 0.0001). The results showed that people who were willing to participate in training programs had significantly a higher knowledge level compared to those who were unwilling or had no idea (knowledge level: 64.8±13.7 high willingness, 52.2±13.8 no idea, 35.2±21.7 unwilling). Statistical analysis also showed that the rate of the study of scientific articles significantly increased knowledge level so that there was a significant difference between the knowledge level in people who study weekly and that of people who study monthly (P = 0.02) and those who study sporadically (P = 0.0001) and those who have no study (P = 0.0001). The level of attitude was also significantly higher in those who studied weekly compared to those who had no study at all (P = 0.0001). One-variable analysis showed that people with an employment history of 20 years and over have significantly lower knowledge (P = 0.03) than those with an employment history of less than 20 years. Moreover, the age over 60 years showed a lower level of knowledge (P = 0.008). Moreover, no significant relationship was found between the initial place of starting the work and the type of skill and knowledge level (P = 0.974, P = 0.865, respectively).

Investigating the relationship between knowledge level and questions related to clinical application

The results showed a significant relationship between the knowledge level of stem cells and the willingness to suggest stem cell storage to the patient (P = 0.0001). Moreover, the subjects have used one or more regenerative therapies sporadically significantly obtained knowledge score more than those who did not use this method (P = 0.003). No significant relationship was found between dentists' knowledge about the role of incentive to suggest regenerative therapy to patients and the willingness to refer patients to another dentist due to the lack of regenerative therapy facilities (P <0.05).

Multivariate analysis

Finally, multivariate analysis was performed to examine the effect of independent variables on knowledge. The results showed that females compared to males (P = 0.04, B = 2.9), those who participated in the seminars (P = 0.0001, B = 10.9), and those who had the willingness to participate in training courses (P = 0.0001 and B = 11.9) showed a higher level of knowledge, but other variables such as age and employment history that were significant in one-variable analysis were not significant at the simultaneous effect of the variables.

Discussion

The results of this study showed that the majority of dentists had a moderate level of knowledge. The One-variable analysis also showed that age and employment history had a significant relationship with knowledge. The highest number of participants in the study was in the age group of 31-40 years (56.3%) and the lowest number of them was in the age group of 51-60 (0.8%). Dentists in the age range of 20 and 30 years had the highest level of knowledge and the dentists at the age of 60 years and higher had the lowest level of knowledge. It could be due to more information about stem cells in new resources. It should be also noted that the number of dentists in the age group of 60 years and higher was very low. However, descriptive statistics show that with increasing the age, the level of knowledge of dentists is reduced. Although multivariate analysis that examines the effect of age simultaneously with other variables such as gender did not show a significant relationship. However, a lower level of knowledge at higher ages indicates the lack of studies among the dentists after graduation. Although one-variable analysis showed that dentists with a shorter duration of activity (lower employment history) had significantly a higher level of knowledge, this finding was not significant with using multivariate analysis. However, the low level of knowledge in people with more employment history can be explained with the age-related findings. The results of this study showed a significant relationship between gender and knowledge level. The relationship between gender and knowledge has not been examined in similar studies. The knowledge of women was significantly higher in this study. In this study, although the percentage of women aged 20 to 30 years (34.3% of the total number of women) was higher than that of men of this age group (16% of the total number of men). In general, the number of women in this age group was significantly higher than that of men (57 versus 34), and, as noted, the level of knowledge in this age group was higher than that of the other age groups. Given the greater number of women in this age group, the result is not surprising. However, as multivariate analysis also showed a significant relationship between gender and women's level of knowledge, this relationship seems to be real. However, further studies are needed to confirm these results. The basic skills of dentists participating in the study were respectively restoration (27.2%), surgery (17.2%), pediatric (15.6%), endodontics (13.5%), prosthesis (13.2%), orthodontics (7.1%), and periodontics (6.1%). No significant relationship was found between the knowledge and basic skills of dentists. Although the number of dentists doing restoration work in this study was almost twice that of other groups, the mean score of knowledge of all groups was almost at the same level. Nourbakhsh and Zarreh (2016) also concluded that the knowledge level of dentists in Isfahan about the use of dental stem cells in different skills was not significant (15), which is consistent with the result of the present study. The knowledge of dentists who started their work at public centers (69.6%) and private clinics (30.4%) showed no significant difference, which could mean that the scientific atmosphere in these centers and the level of interest in stem cells are at the equal level. Our searches found no similar study to evaluate the knowledge of dentists about stem cells according to the workplace of the dentists. However, Akhlaghi et al. (16) and Seyfi and Valizadeh (17) also concluded that there was no significant relationship between workplace and knowledge. Dentists with a history of participation in related seminars, more study of articles and a willingness to participate in the training courses had a higher level of knowledge that this result is quite obvious. The important point is the rate of study of articles so that the items "sporadically study of articles " and "never study of articles" obtained higher percentage than the item "weekly study of articles", indicating that dentists are somewhat unaware of the importance of the regular study. Moreover, there was a significant relationship between the level of knowledge and the willingness to suggest stem cell storage to the patient and the use of one or more regenerative therapies in dentistry.

Conclusion

The results of this study suggest that the knowledge of the dentists about the stem cells is at the moderate level and few of them have a high level of knowledge and it is necessary to enhance their knowledge and clinical application in this area by providing resources and training programs needed. The results of investigating their rate of study also showed that as regenerative therapy is a new and revolutionary method for the treatment of lost or damaged teeth, the culture of study and learning should be enhanced among the dentists after graduation.

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