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Original Article

Locker's Model for Assessing Periodontal Health Status of the Lawyers in Bhopal

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Abstract

Background: The current study is intended to assess the oral health-related quality of life (OHRQoL) comprising Locker's model among lawyers in Bhopal city. This study was framed to integrate OHRQoL with morbid and terminal dental condition allied to periodontal health assessment by encompassing Locker's Model. **Methodology:** A descriptive cross-sectional study was conducted incorporating 250 lawyers of Bhopal city. The evaluation and association of periodontal status and OHRQoL by Leao and Sheiham 5-scale questionnaire was used in the present study. Post data collection, periodontal health status of lawyers was observed, the association between the dimensions of Dental Impact on Daily Living (DIDL) Scale with each construct of Locker's conceptual model of oral health was complemented. The collected data were tabulated using Excel, and analysis was done using the Statistical Package for the Social Sciences 19.0 version. Pearson correlation test, ANOVA, and Post hoc test were used to test the significance. **Results:** Observation included 29.6% of lawyers were dissatisfied with their teeth and existing oral health. All the dimensions of DIDL Scale show a statistically positive association with each other and Community Periodontal Index highest score with pain and eating restrictions. Conclusion: Oro-dental diseases or problems have definitive effects on patient's satisfaction with different aspects of their dentition and also experienced greater psychological discomfort. As rightly said by the WHO "Oral Health for Healthy Life" and oral cavity is the gateway of general health, so oro-dental problems cannot be unkempt.

Keywords: Dental Impact on Daily Living Scale, lawyers, Locker's model, oral health

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INTRODUCTION

Good oral health is a crucial component to maintain and improve general health and quality of life.[1] Oral health and general health are governed by various factors such as lifestyle, dietary habits, socioeconomic conditions, and occupational environment. Professional background plays a vital role in the well-being of a person. Stressful working condition can affect mental as well as general health of a person. Lawyers by profession are very stressful, challenging, and busy with hectic schedules. Being a lawyer and working within the criminal justice system can be a difficult job. "To me, a lawyer is basically the person that knows the rules of the country.

We're all throwing the dice, playing the game, moving our pieces around the board, but if there is a problem the lawyer is the only person who has read the inside of the top of the box."[2] – According to Jerry Seinfeld Lawyers, also known as attorneys, are certified professionals who advise and represent natural and juristic persons in legal matters. They counsel clients, perform legal research, prepare legal documents, and represent clients in criminal and civil court proceedings. They are educated, hardworking, righteous individuals with a passion for the judiciary system.[3,4]

Psychological issues, substance abuse, depression, anxiety, and job frustration among attorneys appear to have increased in recent years. The relationship between legal counselor traits and these issues may be a bit more complex. Other evidences exist that lawyers generally experience more psychological distress than do people in other professions. The reasons behind this distress have not been convincingly documented, but lots of studies suggest both external and internal reasons with their problems and may inculcate an isolationist, competitive, noncollaborative attitude, thus contributing to emotional distress. [5]

These factors might have an effect on general as well as oral health of lawyers and automatically decline the quality of life. [5-7] Oral conditions, like periodontal disease, are known to affect various aspects in quality of life. One of the most widely used instruments to assess the oral health impact on quality of life is Dental Impact on Daily Living (DIDl) proposed by Leao and Sheiham which is derived from a theoretical framework, namely Locker's conceptual model of oral health. [8]

David Locker developed a conceptual model for the first time to explain the pathways by which oral diseases and conditions affect quality of life. It is based on the WHO classification of impairment, disability and handicap, and attempts to capture all possible functional and psycho-social outcomes of oral disorders. The model states that there are five consequences of oral disease: impairment, functional limitation, pain and discomfort, disability, and handicap and that these are sequentially related.[9-12]

Lawyers advise and represent individuals, businesses, and government agencies on legal issues and disputes. It is the society's moral liability to protect the general and oral health of their defenders. There are still no statistics on the oral health of lawyers, existing literature is documented keeping in mind the need for it. Thus, a scientific study is being conducted among lawyers in Bhopal to determine the impact of periodontal disease on quality of life using Locker's model in order to incorporate oral health-related quality of life (OHRQoL).

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METHODOLOGY

A descriptive cross-sectional study was conducted among lawyers of Bhopal city to assess the association of periodontal status with OHRQoL by Leao and Sheiham five-dimensional questionnaires. Bhopal district consists of a session court with a total of 350 lawyers operational in Bhopal city. The existing study was conducted for assessing oral health of all the obtainable lawyers in session court. Prior permissions and written consent of participation were obtained before the start of the study. Due to hectic schedule, few participants declined to summit for oral health checkup, some gave very negative response, some failed to submit their consent forms, and some submitted incomplete questionnaire forms. Thus, such participants were not included in the study. Finally, with inclusion and exclusion, 250 lawyers volunteered positively were examined during the period of 6 months.

Organizing the study

Prior permission through a structured format was also obtained from the secretary of the State Bar Council of Madhya Pradesh with the details of the mode and duration of the work to be undertaken. The study proposal was submitted for approval and clearance from the Ethical Review Board of our institute. The purpose of the study was elucidated to each one of them, and written informed consent was obtained before the oral health examination.

Sampling methodology

The preparations for the study were done during the middle of 2019, which included preparation of the questionnaire pro forma, informed consent, and pilot study. In order to check the feasibility and validity of the study, a pilot study was carried out. From the pilot study, sample size (N) 246 was calculated. The study period extended from December 2019 to February 2020. Lawyers who were registered by the State Bar Council of M.P(Jabalpur) with 35–55 years' age groups(mean age – 43.51, standard deviation: 6.049) were included in the study.[1] To prevent confounding effect from the study, the lawyers who have chronic medical condition, any craniofacial abnormalities like cleft lip and palate, and the individual above 55 years of age were excluded in the study as these conditions may alter the quality of life of individuals.

Method of examination

The demographic details were recorded. Community Periodontal Index of Treatment Needs(CPITN) WHO 1997 was recorded for each subject by using mouth mirror and CPI probe under natural light. Autosterilized instruments will be used for examination of each research subject. Used instruments were placed in disinfectant solution, then washed, and drained well before sterilization. Proper sterilization protocol was followed, so in a day 10–15, lawyers were examined under daylight.

Outcome variables

Dental Impact on Daily Living

DIDL consists of five scales, i.e., comfort, appearance, pain, performance, and eating restriction. Reliability, accuracy, and reproducibility of this test have been authenticated by previous studies.
Impacts for each statement are coded as follows: +1 – a positive impact, 0 = impacts not considered totally negative, and −1 = negative impacts.

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Periodontal heath

Recording of clinical parameters included CPITN and missing tooth due to periodontal disease. The code of CPITN was interpreted for the purpose of periodontal status evaluation code 0 as healthy periodontal status, code 1 as gingivitis, and code 3 and 4 as periodontitis. The treatment need was not considered. All examinations were carried out by one examiner with the aid of a plain mouth mirror, explorer, and a CPITN probe.

Relationship of Dental Impact on Daily Living Scale with Locker's conceptual model

After the collection of data, relationship between the dimensions of DIDL Scale and periodontal status with each construct of Locker's conceptual model and the direct and indirect (mediated) relationships between the constructs as hypothesized in Locker's conceptual model of oral health. In accordance with the model, we hypothesized that functional limitation would predict disability and psychological impact (i.e., discomfort/psychological disability combined) which, in turn, would be associated with handicap. Table 1 shows the items of each construct of Locker's conceptual model of oral health. Disease construct of Locker's model contains periodontal disease prevalence. Impairment contains edentulous space or missing teeth due to periodontal problems, pain and discomfort contains physical and psychological symptoms example spontaneous pain in teeth and dental pain when eating or drinking hot or cold, functional limitation contains eating restriction for example capacity to chew and change the type of food because of teeth, disability construct contains performance item that is limitations in performing daily activities, e.g., unsatisfactory diet and handicap construct of Locker's model contain social disadvantage, for example, avoid showing teeth during smiling and contact with people is affected by the appearance of teeth.[21]

Statistical analysis

The Pearson correlation, ANOVA, and post hoc tests were used to interpret the data using the Statisticala Packages of Social Sciences (SPSS) Version 23.0 (IBM SPSS Statistics, Version 23.0, Armonk, NY: IBM Corp) computer software. A significance level for all statistical analyses was set at $P < 0.05$

RESULTS

A total of 250 lawyers formed the study group age ranged from 35 to 55 years (mean age: 43.51, standard deviation: 6.049). Among all the lawyers (250), the declining trend of practice was seen with the increase in age mostly due to reduction in threshold for stress with intensification in age.

Lawyers were divided into three categories based on their years of experience: Group 1, Group 2, and Group 3, who have 0–10, 11–20, and 21–30 years of experience, respectively. Group 1 comprises 29.6% among all lawyers, Group 2 comprises 55.2%, and Group 3 comprises 15.2%.

The DIDL questionnaire revealed that 29.6% of respondents were dissatisfied with their teeth and overall oral health. As shown in Graph 1, 12.8%, 12.4%, 19.2%, 8.2%, and 8.8% were completely dissatisfied with the appearance, pain, comfort, performance, and eating restriction dimensions, respectively. According to the DIDL Scale, the age group of 51–55 years has the highest level of dissatisfaction (46.7%), led by 46–50 years old, and the remaining two age groups have the lowest level of dissatisfaction [Table 1].

Prevalence of periodontal disease indicates that 68% show a high prevalence of periodontal disease [Figure 1] and eating restriction, while 23.6% of lawyers show a predominance of pain and discomfort in the tooth or other oral-dental structures. Satisfaction with performance specifies that 55.2% of lawyers were satisfied with

performance while 44.8% of lawyers were dissatisfied with performance.

Locker's conceptual model shows that 70% of lawyers recorded some or the other morbidities associated to oral health in which 68% having periodontal disease out of which 38% lawyers verified impairment stage extremity as loss of teeth or having missing teeth and 24% of study population having pain and discomfort either due to dental caries or periodontal disease, 68% having functional limitation. Out of 68% of lawyers in morbid oral health stage, 45% of lawyers indicated to handicap of oral health harmony so causing social dilemma (social disadvantage) [Figure 2]

Table 1: Distribution of satisfaction scores of Dental Impact on Daily Living Scale according to the age groups

Age groups	Satisfied, *n* (%)	Relatively satisfied, *n* (%)	Unsatisfied, *n* (%)
35-40	8 (8.1)	71 (71.7)	20 (20.2)
41-45	5 (7.9)	43 (68.3)	15 (23.8)
46-50	4 (10.3)	19 (48.7)	16 (41)
51-55	7 (14.3)	19 (38.8)	23 (46.9)
DIDL total score	24 (9.6)	152 (60.8)	74 (29.6)

DIDL: Dental Impact on Daily Living

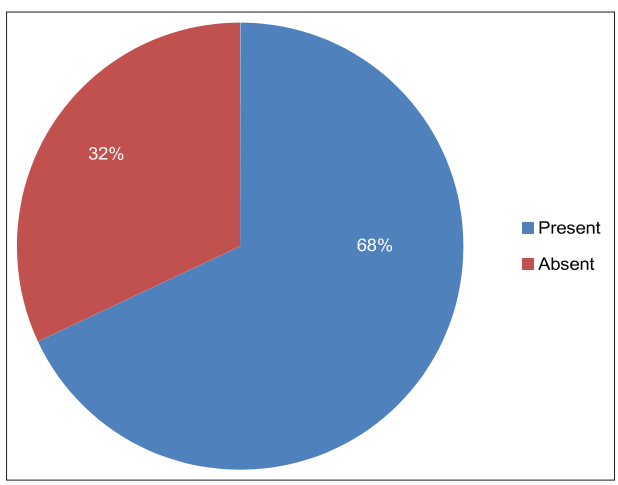

Figure 1: Prevalence of periodontal disease

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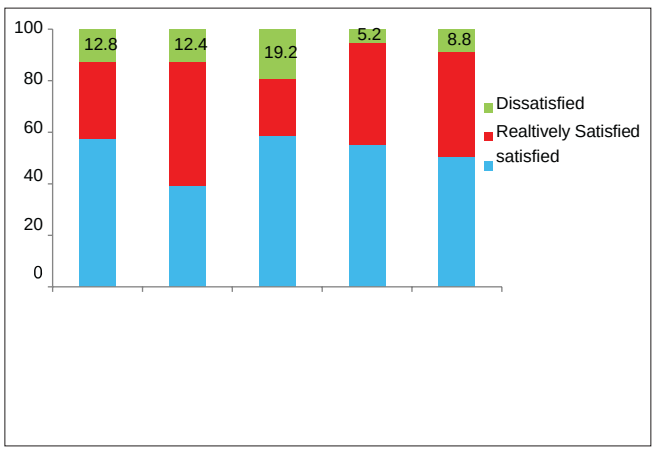

Graph 1 : Scores of individual satisfaction dimensions (Dental Impact on Daily Living dimensions) in the study sample (n = 250)

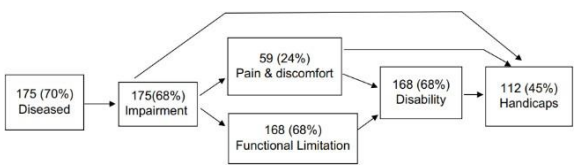

Figure 2: Number of lawyers in each construct of Locker's conceptual model of oral health

DISCUSSION

A paradigm shift in health care has occurred recently, reflecting a shift from a biomedical to a more comprehensive and broader biopsychosocial model of health. Health is one of the essential dimensions concerning quality of life. Even though oral diseases with local symptoms, such as pain or tooth loss, are rarely life threatening, they can deeply influence the health-related quality of life (called OHRQoL). [13,14]

Several instruments have been developed to assess OHRQOL. The existing research utilizes DIDL questionnaire to assess the OHRQoL of attorneys. The present study represents the pioneer effort to compare Locker's conceptual model with DIDL Scale.

Professional setting plays an essential role in the well-being of a person. The majority of the research on OHRQoL has been performed on various occupational groups of population, but the present study is the one among very few studies which described OHRQoL of lawyers and the attempt at lawyers at Bhopal is novel. Thus, to articulate a baseline data on oral health status of lawyers in Bhopal district with appropriate planning of primordial, primary, secondary, and tertiary levels of prevention of oral health and association with the OHRQoL so that we can provide a vital source of planning oral health program and inform our policymakers

for further inquisitive in this field to ensure good oral health.

This study reveals the OHRQoL of lawyers using DIDL Scale and compares it with Locker's conceptual model of oral health which has been developed using the 1980 WHO classification of impairment, disability and handicap, and efforts to confine all possible functional and psycho-social outcomes of oral disorders. In their report, Kieffer and Hoogstraten[15] proposed that the handicap be judged as having the most significant influence on daily life. This was presumed because the handicap is at the top of the locker model's hierarchy and then the dimensions lower in the hierarchy.

In 2017, a report published by Schuster et al. [16] established that the patients with a mean age of 65.32 years illustrate maximum dissatisfaction score in three DIDL domains: appearance, chewing ability, and general performance. In 2011, Hantash et al. [17] found that 14.3% were dissatisfied with their teeth and scored below 0. Whereas, in the year 2013, Ganesh and John[10] confirmed that 7.9% were unsatisfied with their teeth. In comparison to other studies conducted on other professions or individuals, the present study shows the highest level of dissatisfaction because lawyers have a busy work schedule, and as their age and years of experience increase, they become more immersed in their work, neglecting or skipping their fitness, or overlook their daily diet. As a result, they develop harmful lifestyle that leads to poor general and oral health.

As per the current study, 68% of lawyers in Bhopal have periodontal disease. Subhajit et al. [18] revealed in 2019 that participants in a survey of coast guard staff in Mangalore had poor oral hygiene, with a periodontal disease prevalence of 81.9%, which is close to existing research. Even, according to the findings of Naveen and Reddy,[19] periodontal disease affects 99% of Mysore police officers. The current findings showed a lower prevalence of periodontal disease as compared to police officers who were more stressed, had even more hectic hours, and were unable to concentrate on their oral hygiene due to their frequent work shifts. Sogi et al. [20] stated that 23.6% of police officers had periodontal illness, whereas in 2003, Lt Col Ahuja and Darekar[21] noticed that 47% had periodontal disorder.

These two experiments reported different conclusions from the current research because, as time passes, the work burden increases, and the oral health condition deteriorates, so the present study shows high prevalence of periodontal disease as external environment too has a major role to play on stress and invariably on health component. Disease, functional limitation, and social physical and psychological disability are the most affected dimensions of Lockers' theoretical paradigm, whereas pain/discomfort and impairment are the least affected.

According to Locker's model, lawyers in Bhopal are more likely to suffer from oral-dental disorders, thus putting their oral health at risk. Lawyers' quality of life was impaired as a result of dental disease, as seen in each construct of the locker model. If the illness is still in the pathogenic stage or is not treated, it can lead to a number of debilitating effects that can eventually impair daily life. The current research reveals that poor oral health has an effect on the other dimensions of Locker's model of oral health.

According to the construct of Locker's model, after the disease phase, the person will proceed to the impairment stage, which is a functional abnormality of the dentition for the fact that the individual restricts their body function, such as not being able to eat properly or causing pain and discomfort, and often causes restrictions of everyday activities. For example, an unsatisfactory diet will proceed to the model's next phase, which is physical, psychological, and social disability.

The individual's social contact is affected as a result of the disease's negative impact, culminating in the handicap stage, which is the model's final phase. As per the findings of the current research, 70% of lawyers recorded some or the other morbidities associated to oral health 68% having periodontal disease, 38% were in impairment stage, 68% were in functional limitation stage, 24% were in pain and discomfort stage, 68% were in disability stage and 45% were in handicap stage of Locker's theoretical model of oral health.

As a consequence, the diseased, functional limitation, and disability stages of the oral health model were the most effective. According to the research performed by Baker et al.,[11] 64% were in the pain and discomfort category, 76% had psychological impact, 86% had functional limitation, 31% had social disability, and 82% were in the handicap stage, whereas Nuttall et al. [22] concluded that pain and psychological discomfort were the most frequently recorded problems. Such research reported dissimilar findings to the current study since it was conducted on a highly educated group of individuals whose perception toward health is higher than that of

other groups; however, any complexity of their oral health, such as pain and discomfort, will impair their day-to-day life and work schedule so, before progressing to the complication stage of the disease, the patient receives treatment, thus the other rear constructs in the model hierarchy are less affected than the preceding construct of Lockers' conceptual model of oral health.

Events reported by dimensions higher in the hierarchy are judged to have a more serious effect on quality of life than events depicted by lower-level dimensions. The current study's results indicate that lawyers are largely inflated in performing their daily activities, eating restrictions, and social contact with people due to dental diseases. As a result, the Locker's model explicitly demonstrates that poor oral health status deteriorates an individual's quality of life, restricting their daily activities and thereby impacting their social life. Since the study was confined to lawyers in Bhopal, further research on the oral health status and OHRQoL of lawyers is required to generalize the results and prepare an oral health promotion program for this specific population.

CONCLUSION

The results of the current study indicate that dental diseases have a significant impact on patient's satisfaction with various aspects of their oral health. Thus, oral health affects physical, social, and psychological well-being of people. The sample of lawyers presents a unique opportunity to study a broad population from different socioeconomic and regional contexts.

With limited literature on lawyer's oral health, the study highlighted a greater need to conduct further studies among lawyers of different districts and states. The unfavorable attitude of this profession makes it essential for the government to provide dental amenities for lawyers with proper administration. There is a need of frequently organizing outreach programs and treatment camps at different district courts to prevent the negative consequence of dental problems on quality of life of attorneys.

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Conflicts of interest

There are no conflicts of interest.

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