Oral pathology
and Medicine

Oral health and job opportunities

Salute orale e opportunità di lavoro

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ABSTRACT

OBJECTIVES. Oral diseases are a problem for individuals, society and for the public health system. In Latin America, the high cost of dental treatments leads health authorities to divert attention from oral illnesses and to consider them as luxury goods, when compared to other life-threatening diseases. However, dental health far exceeds the healthcare dimension and often involves issues affecting the social life of individuals, such as the employment world. The aim of the present study is to evaluate the relationship between job opportunities and dental health status.

MATERIALS AND METHODS. The authors conducted a prospective study. Variables analysed were missing teeth, socioeconomic status and ranking during job selection process. After stratified two-stage randomized selection of young adults, volunteers were included in the study. Three sets of folders were prepared, each one made up of the CVs of 20 candidates (10 CVs of volunteers with complete dentition photograph, 5 CVs of candidates with missing teeth; and 5 CVs of candidates, whose images had been digitally modified in order to include missing teeth). All CVs had similar personal data, background, and skills. Human resources managers from 300 entities were asked to rank candidates from each folder. A multivariate analysis was performed by associating all variables.

RESULTS. Subjects with missing teeth ranked in the lowest positions. Although the capabilities and skills presented in their CVs were equivalent, candidates who did not have a complete dentition, were average rated in 15.5 ± 4.1 position in a 20 candidates ranking list. Strong association was observed between rejection of job application and missing teeth ($p = 0.003$).

CONCLUSIONS. The significance of teeth health goes well beyond aesthetics or nourishment function; it plays a strategic role as a key element for labour inclusion. A complete dentition means better opportunities for job applicants. Public health policies should aim to cut the vicious circle in which socioeconomic vulnerable communities are imprisoned, and to guarantee their access to oral care and prevention.

RIASSUNTO

OBIETTIVI. Le malattie della bocca rappresentano un problema per le persone, la società e i sistemi sanitari pubblici. In America Latina l'alto costo dei trattamenti odontoiatrici distoglie l'attenzione da tali malattie, che le autorità sanitarie considerano un bene di lusso se comparate con altre malattie potenzialmente letali. Tuttavia la salute orale va oltre i problemi sanitari, essendo coinvolta in aspetti relativi alla vita sociale dell'individuo, quali per esempio quelli legati al mondo del lavoro. Scopo del presente articolo è valutare l'associazione tra le opportunità di lavoro e lo stato di salute dentale.

MATERIALI E METODI. È stato condotto uno studio prospettico. Le varia-bili esaminate sono state: denti mancanti, stato socioeconomico, posizione ottenuta nelle graduatorie durante il percorso di selezione lavorativa. Dopo una selezione casuale stratificata a due stadi, alcuni volontari sono stati inclusi nello studio. Sono stati preparati tre gruppi di cartelle, ognuna composta dai CV di 20 candidati (10 CV di candidati volontari con dentatura completa e relativa fotografia, 5 CV con la fotografia di candidati con denti mancanti e 5 CV corrispondenti a candidati per i quali la fotografia era stata modificata digitalmente per includere i denti mancanti). Tutti i CV erano simili per dati personali, esperienze e abilità. È stato chiesto ai responsabili delle risorse umane di 300 società e istituzioni di classificare i candidati di ogni cartella. Un'analisi multivariata è stata realizzata associando tutte le variabili.

RISULTATI. I candidati con denti mancanti sono stati collocati agli ultimi posti. Anche se le competenze e le capacità riportate nei CV erano equivalenti, la posizione media dei candidati senza dentatura completa si è attestata a 15,5 ± 4,1 in una graduatoria di 20 candidati. Una forte correlazione è stata osservata tra il rifiuto all'assunzione e l'edentulia (p = 0,003).

CONCLUSIONI. La salute dei denti riveste un'importanza che va oltre l'estetica e la funzionalità, svolgendo un ruolo strategico per l'inclusione nel modo del lavoro. Una dentatura completa garantisce migliori opportunità di lavoro per i candidati.
Le politiche di sanità pubblica devono mirare a interrompere il circolo vizioso nel quale ricadono le comunità vulnerabili dal punto di vista socioeconomico, garantendo loro accesso alla prevenzione e alla cura dentale.

1. INTRODUCTION

Oral disease is a problem for individuals, society and for public health system [1]. Dental diseases have been reduced over the last decade in most developed countries, but this decline was not uniform in all countries [2].

Latin America still has severe health's problems that shorten life's expectations of some groups of the inhabitants located in these latitudes. It might be for this reason and also for the high cost of dental treatments that oral health has not a priority and is often considered a luxury good for health's authorities when it is compared to other life threatening diseases [3].

Many of the oral diseases are preventable with an appropriated dental council and a change of habits in food and oral hygiene [4]. However, the delayed reaction of public policies towards this issue and the risk to oral diseases of social exclude population, frequently cause the lost of teeth elements [5].

Some authors associated the aesthetic characteristics of individuals and their economical succeed [6]. It might be then a vicious cycle, since access to dental controls and treatments are also seen in socially wealthy population [7]. The aim of this study is to establish the impact of lack teeth in job's opportunities.

2. MATERIALS AND METHODS

2.1 TYPE OF STUDY

Cross sectional study.

2.2 PATIENTS SELECTION

After a free complete health control provided by the University and the Minister of Health, 1,840 volunteers from both sexes, aged 18 to 30 years old, were invit-

ed to participate in the selection process. A stratified double stage randomized sample selection was performed considering as major variables denture status and sex (using SPSS for Windows 14). All volunteers were initially divided in two groups according to their oral health. The first group included those volunteers in whom at least the loss of 2 or more upper front teeth were detected; while the second one had all their teeth.

After the conformation of these groups, another selection was performed inside each of them according volunteer's sex. Five females and five males of both initials groups were selected. Thus two groups were finally obtained after selection process: Group 1 integrated by 10 volunteers in whom lack teeth were detected and group 2 with 10 volunteers with complete teeth.

The study was carried out in accordance with the ethical standards established in the Declaration of Helsinki.

2.3 METHODS

A digital photograph (face and neck) of each volunteer from both groups (1 and 2) was obtained during smiling. Group 1 volunteer's photographs were copied and doubled in order to have two sets for each individual of that group. These copies were then digitally modified by adding the missing teeth by a commercial software program (Adobe Photoshop© Cs2 for Window) forming a new virtual group named "Group 3". These modified copies were standardized using the image of the opposite tooth to the missing one from the same person, in this way, 30 images of volunteers were then obtained (10 volunteers with complete denture; 10 with lack of at least two teeth, and these same 10 last volunteers but their teeth digitally added at their face images).

In addition, 30 Curricula Vitae (CVs) with same contents, knowledge and skills were built up, and attached to each one of the photographs. Therefore, 30 CVs with same contents were obtained, only differing in the presence or absence of teeth in the applicant's picture.

200 small and medium local enterprises, 50 national and international companies, and 50 government agencies in which employees are routinely recruit, were asked chose potential employees. Selection process was given to the head person in charged of human resources selection in each institution. These enterprises belongs to services areas with a close contact to people and they recruit for non qualified works (cleaning, security, supermarket cashier or chargers, and other similar) Job selectors were mainly men (89%), aged between 40 and 54 years old, all of them had a university degree in some commercial or administration area. They were asked to make a ranking from 1 to 20 of the applicants within 24 hours after the folder reception, considering the number 1 as the person with the best chances to work in their company, while the number 20 would be the last option to be taken into account as an employee for their institution. The folders presented to selector contained 20 CVs that included 10 complete dentition applicant's CVs, 5 CVs that had lack of teeth and 5 CVs randomly chosen from the 10 CVs in which photographs were modified. Folder classified were analysed according to applicant's position in the ranking, considering variable teeth (complete/lack), sex (male/female), and photograph (original/modified by Adobe Photoshop©).

2.4 ETHICAL ASPECTS

All participants of the study had to sign an informed consent and answer a questionnaire to evaluate the history of his dental health to be considered as a volunteer. Program was accepted by the MS-PBA Ethical Committee.

2.5 STATISTICAL ANALYSIS

The quantitative analysis was made of the information in the program EpiInfo 6 (CDC/WHO). In the descriptive analysis the values of quantitative variables were summarized by mean ± standard deviation (SD). Qualitative variables were expressed by percentage.

For comparative analysis, the differences between averages and percentages were performed using t-test for 18 degrees of freedom and Chi^2 respectively.

Difference was considered significant when the p value was < 0.05.

3. RESULTS

All 300 human resource head persons agreed to answer the request. Only 291 selectors arrived to classify the CVs in the assigned folders within the next 24 hours of folder delivery. Seven returned their folders within next 48 hours, and only 2 of them returned them the week after receiving it.

The difference in the ranking's positions obtained by each one of the groups of study is shown in table I.

No significant differences were observed between males and females. Applicants with complete teeth showed no differences when they were compared with those participants in whom dentition images were digitally repaired.

Noteworthy, those applicants that had lack of teeth did show significant differences in their ranking position in relation to other applicants in the folder; since they had been always relegated below the half of the list (10th position of the rank-

Tab. I   Position given by human resources managers in the list of job's applicants according to oral health status

Group	Average position	SD	Difference (with group 3)	Difference (with group 2)
Group 1 (group with missing teeth)	15.5	4.1	+10.1 p = 0.004	+11.4 p = 0.003
Group 2 (group with complete dentures)	3.4	7.1	–4.3 NS	–
Group 3 (teeth digitally added)	4.7	6.9	–	+6.3 NS

Legend: SD, Standard Deviation; NS, Not Significant.

ing) and on average in 15.5 ± 4.1 position in the selection process (table I).

Finally, all volunteers were included in an official program that provided them of a personalized treatment and prosthetic rehabilitation according to each patient's needs and problem, until complete teeth were restored.

4.   DISCUSSION

In countries with a high poverty level, with a significant maternal and infant mortality, and with social exclusion, efforts and strategies designed to provide oral prostheses to those inhabitants without a complete dentition, at a first glance might be considered not priority or a luxury good.

Adverse health conditions suffered by communities of many developing countries usually push local authorities to prioritize attending severe systemic illness that may compromise life, rather than oral illness. This point is related with fact that government's political decision makers often promote options that have impact in the short time period while they remain in their positions and functions [8].

Thus, implementations of government policies regarding oral health care are usually postponed or at least not too well-considered in relation to other health risks [9].

However, is necessary to understand that preventive actions towards oral health care do not only improves oral cavity condition but also avoids systemic problems like nutrition status that may influence the future of the population affected [8]. Noteworthy, lack of teeth is associated to socio-economic and psychological dimensions so it could be said that this status far exceeds the health problem.

Unfortunately, it exist a large number of inhabitants that have already installed severe dental problems and lack of teeth [10,11].

This study was performed in order to determine the impact on the self-confidence and degree of exclusion in terms of employment that individuals with absence of teeth elements might have.

Results clearly showed that official makers responsible for selecting human resources in some jobs, placed candidates with lack of teeth in worse positions of candidates ranking. Since CV personal data and background of all candidates were similar it may be inferred that the difference lies in the absence of teeth, above all upper anterior teeth.

This study demonstrated that even the same person when its image was digitally modified improved their ranking positions compared with the original CV.

Other variables like sex of the candidate, which may bias the data obtained, were

initially considered and adjusted during the selection process, so results can only be attribute to oral health status.

This data also evidences that economical vulnerable groups are immersed in vicious circle without exit, since their social condition affects their health, and these problems (like oral health status) exclude them from job opportunities, which finally causes more economical risks for themselves and their families.

In the present study makes clear the significant difference in access to the employment between those with complete dentures and those who do not possess it.

Although it is well accepted that oral disease prevention is a better option than treated and rehabilitate, the problem once this one already exists, it should be considered that at 33.3% of young people in Argentina has already an incomplete denture.

Access to oral health care and dental treatment should then be considered as routinely strategy by health authorities in order to reduce social inequalities. Treating the absence of teeth, avoids other problems that put citizens in conditions of equality against the work market demand.

Limitations of the study are the sex of the candidates (mainly women) and the lack of homogeneity from job selectors.

CONFLICT OF INTEREST
The authors declare that they have no conflict of interest.

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