

Knowledge, attitudes and behavior of Italian mothers towards oral health: questionnaire validation and results of a pilot study

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Summary

Aims. The study is focused on the analysis of knowledge, attitudes and behaviors of Italian mothers in regards to their oral health, deepening the understanding of how the initiation of habits and behaviors for a healthy lifestyle may influence the empowerment process of their children.

Methods. The questionnaire was composed by 14 sections and has been conducted using an online questionnaire on the mothers association's website. Reliability analysis was tested and content validity was evaluated using Cronbach's alpha to check internal consistency with the intention to obtain no misunderstanding results. Statistical analysis was performed through SPSS 19.0.

Results. The total number of the compiled questionnaires was 192. The highest value of the Cronbach's alpha is obtainable in Section 13 (Quality of Life in relation to dental health between 8-17 years old kids) with a value of 0.998 (on 5 items). The total value of the Cronbach's alpha considering the part of questionnaire dedicated only to the mothers that have more than 18 years old children is 0.490 on 116 items.

Considering all the sections of the questionnaire on

134 items and 127 questions, we get an alpha value of 0.784.

Conclusions. The questionnaire for the mothers showed a good reliability in the pilot study and it seems it made good results in terms of internal coherence and validity. The online administration allowed the opportunity to optimize the data collection avoiding complications with papers and it offers potentially, a tool able to rapidly gather a vast sample in which to perfect other studies.

Key words: Knowledge, attitudes, behavior, Italian mothers, oral health.

Introduction

With the extension of the average life in industrialized countries, the current epidemiological picture has been delineated, characterized by the prevalence of chronic degenerative diseases. Their role assumed in the determinism of multiple factors, especially behavioral and lifestyle factors, requires the focusing of attention on the promotion of health. This is founded not only on the study of health determinants but also on the public medical programs that have proven their efficacy and on the fight against inequalities, and it entails the collaboration of the medical system with other sections of society to develop improvements in favor of health (1).

The European Union Council recognizes that unhealthy lifestyles contribute in a noteworthy and growing way to the severity of diseases. Improvement of health conditions of the population is therefore a main end for the states that are members of the European Council and to its adherents. Healthier lifestyles could lead not only to better health conditions and the decrease of disease but, in the context of ever growing health prices, to better disease prevention. It's a good investment and it's also a very profitable approach in terms of costs (2).

Damaging behaviors create diseases that are a burden for health and social systems therefore, in order to fight them political action is necessary:

- to encourage mobility and physical exercise in people (public transportation and urban green);
- to support the consumption of fruits and vegetables;
- to reduce the percentage of salt, sugars, and fats in food;
- to reduce the amount of highly caloric food in the diet;
- to reduce the abuse of alcohol (3).

Poor oral hygiene is the main cause of gum disease, a chronic infection of the tissue surrounding the teeth. It's one of the most prevalent chronic diseases and it is associated with a reduced systemic inflammatory response (4), as well as the increase in the concentration

of the reactive protein C and other inflammatory biomarkers (5,6).

The transfer of bacterial endotoxins and the action of chemical mediators of the inflammation produced by the mother, may have a role in causing premature and underweight births (7).

Regular teeth brushing is considered the best prevention for the control of dental plaque. Brushing teeth with a fluorine toothpaste twice a day is the current medical advice (5,8). Flossing and regular dental check-ups are equally important in order to keep oral health (9).

There is currently a large focus on the beginning of gum disease during infancy (10), as a matter of fact in the oral health field, it is already well-known that psychosocial, cognitive maternal-behavioral factors are associated with the oral behavior of children like teeth brushing (11). The adoption of good habits during childhood begins at home with the parents, especially with the mother who becomes the main reference of behavior (12) and it's also well-known that the social state (13) and even ethnicity (14) may influence the level of oral health.

Motivating mothers to assume the correct behavior for oral health and assuming a better life style in general, may produce positive changes that would determine an increase in the long term benefits for the health of both mother and child (15).

In the last years the number of people who use the Web increased substantially. The Web is used for multiple medical means (16) and for patients who use it primarily as a source of information about their health (17,18). Because of the fact that the Web is a huge mass communication system, it can be used as a big collector of data on statistical medical surveys and for studies about the habits and behaviors of a population.

Aim of the study

The aim of the present work is to realize a study that is focused on the analysis of knowledge, attitudes and behaviors of Italian mothers in regards to their oral health. This work, made in collaboration with the Department of Dentistry and Maxillary-Facial Sciences, the Department of Public Health and Infectious Diseases of the "Sapienza" University of Rome, the National Association of Mothers and the Academy of Dentistry and Dentistry Prevention "Il Chirone", presents the first results of an initial study, that will carry on the analysis of important statistical data about the behaviors of the mothers in regards to their own oral health, deepening the understanding of how the initiation of habits and behaviors for a healthy lifestyle may influence the empowerment process of their children, meaning the education and voluntary embracing of good health rules.

Materials and methods

Participant and setting

This survey has been conducted using an online questionnaire on the mothers association's website (www.associazionemamme.it) in which 192 mothers participated.

Structure of the questionnaire

The questionnaire which was anonymous, was a combination of many scientifically proven questionnaires, that take into account different ways to express the concept of health, from the practical and technical side to the psychological aspects that provide the foundation of the behavior of a person.

These are the questionnaires used as the reference for the final one used in this study: SF12 Questionnaire (evaluation of life style) (19), IPAQ Questionnaire (physical activity evaluation) (20), HU-DBI questionnaire (Hiroshima University, Dental Behavior Inventory) (21), EGOHID Questionnaire (European Global Oral Health Indicators Development Project) (22).

The questions are about topics that concern not only personal life habits like physical activity, alcohol consumption and smoking habits, and oral hygiene habits, but they are aimed at revealing the level of knowledge about some different topics like prevention, therapies, aesthetic factors and the anxiety level of receiving a clinical treatment.

The questionnaire is composed by the following sections:

Section 1 - Anamnestic and social-demographic.

Section 2 - (Part1) Attention to the mothers' oral hygiene; (Part2) Protections and oral hygiene habits and preventive behaviors.

Section 3 - Risk factors, habits.

Section 4 - Level of oral health.

Section 5 - Oral health related quality of life.

Section 6 - Quality of Life evaluation.

Section 7 - Physical Activity evaluation.

Section 8 - Oral health level of 3-17 years old kids.

Section 9 - Community programs for 3-17 years.

Section 10 - Attitudes and risk factors of 5-17 years old kids and 12-17 years.

Section 11 - Dental assistance sources.

Section 12 - Preventive visit for pregnant women.

Section 13 - Oral health related quality of life in 8-17 years old kids.

Section 14 - Orthodontic and dental traumas.

Statistical analysis

The descriptive analysis uses averages and standard deviations for quantitative variables and frequencies for qualitative variables.

To measure the internal coherence of the items grouping the α of Cronbach has been used and, in order to check if some elements didn't cohere with the rest of the scale and should therefore be discarded, an analysis of reliability has been performed. Adding and eliminating the elements one by one created the total correlation between the items and the alpha variability between the elements. When Cronbach's alpha is equal to 1 it means that the questions have an almost identical construct, with consequential coherence. Generally, a value of an alpha of 0.7 is considered acceptable (23).

The data collected has been put in a database cre-

ated with Excel and analyzed with SPSS for Windows (release 19). The analysis was made only on the items with a response level higher than 15% and the sections already validated in the literature have been excluded from the analysis. The level of significance was fixed in $p < 0.05$.

Results

The total number of the compiled questionnaires was 192.

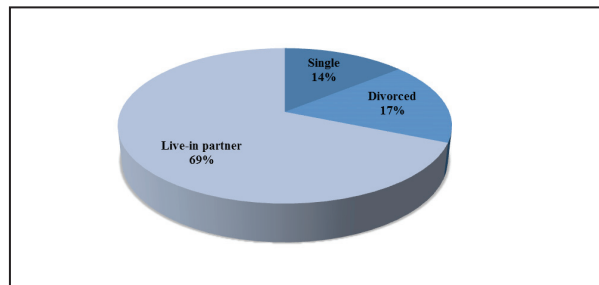


Figure 1 - Marital status of the mothers.

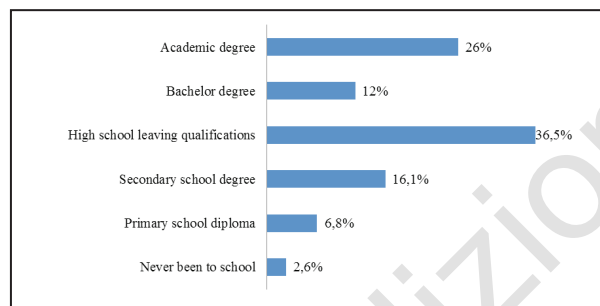


Figure 2 - Education level of the mothers.

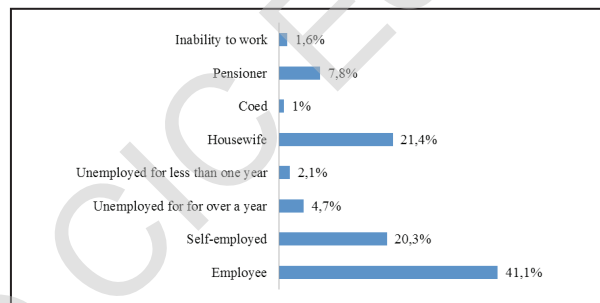


Figure 3 - Employment of the mothers.

The mothers involved had an average age of 45.9 years (SD 12.5). Figure 1 describes the marital status of the mothers. 15.6% of the sample refers to those affected by diabetes and 12% to those with cardiovascular diseases, particularly hypertension (9.4%). In regards to the number of children, 44.8% of the mothers had just one, 34.9% two kids, only 1.6% had four. Figures 2 and 3 show respectively the level of education

of the mothers and the career category to which they belong,

Validation of the questionnaire

In Table 1 is reported the analysis of the questionnaire by sections.

The highest value of the alpha of Cronbach is obtainable in section 13 - Oral health related quality of life between 8-17 year old kids - with a value of 0.998 (5 items). In this section 61.5% of mothers declare ignorance about how often their own children find difficulty eating, or feel pain, tension or embarrassment because of dental problems. Section 10 - Attitudes and risk factors of 5-17 year old children and 12-17 year old children - shows a value of alpha of 0.969 (15 items). 83.3% of mothers answered no to the question of whether their kids brush their teeth each time they eat, and they answered "never" to the question of if their kids smoke.

In section 8 - Health level of children between 3-17 - the value of alpha is 0.881 (3 items). 62.5% of the mothers didn't know with what frequency their own child brushes his or her teeth, 64.1% and 63.5% didn't know respectively if the toothpaste used was fluoride based or if fluoride was used in other forms in addition to the toothpaste.

In section 9 - Community programs of 3-17 year old children - the result is a value of an alpha of 0.771 (3 items). To the question of if there is a program of disease prevention for dental health for kids at school, 63% of mothers didn't know what to answer and 22.9% answered no; 62.5% didn't know or wasn't sure if their own kids were visited by a dentist in the last 12 months for the prevention of oral diseases.

Section 5 - Oral health related quality of life - had a value of alpha of 0.761 (8 items). Regarding some sides about oral health in the last 12 months, 83.9% of mothers never found difficulties to eat because of mouth problems, 81.3% never felt pain to their teeth and gums, almost never for 68.2% and for the 67.2% of mothers the condition of their teeth was cause for embarrassment and they avoided smiling.

Section 3 - Risk factors and habits - (27 items, alpha=0.773) reveals that 67.6% of mothers ate more than 6 times a day. 72.3% of the sample ate between 5 and 9 portions of bread each week, pasta was consumed by 81.9% at the most four times a week, beans were not eaten by 64.9% of the mothers during the week, fruit (consumed up to nine times a week) and vegetables (up to four times a week) were consumed by 74.5%, red meat by 68.1% up to 9 portions a week in respect to 88.3% that consumed at the most four portions of white meat, cheese and fish are consumed up to four times a week by 89.4% and finally 67% of mothers don't consume any amount of sweets during the week. 92.6% of mothers say they don't smoke and 92% don't drink alcohol.

Considering section 12 - Preventive visit for pregnant women - (2 items, alpha =0.720) it appears that 72.9% of mothers were never visited by a dentist during their last pregnancy.

Sections of questionnaire		Number of questions	Number of items	α value
Section 1. Anamnestic and social-demographic.		13	10	0.555
Section 2.	Part 1. Attention to the mothers' oral hygiene.	28	28	0.564
	Part 2. Protections and oral hygiene habits and preventive behaviors.	18	18	-0.330
Section 3. Risk factors, habits.		10	27	0.733
Section 4. Level of oral health.		3	2	0.586
Section 5. Oral health related quality of life.		8	8	0.761
Sections of questions for mothers who have children with less 18 years		6	5	-0.266
Section 8. Oral health level of 3-17 years old kids.		4	3	0.881
Section 9. Community programs for 3-17 years.		5	3	0.771
Section 10. Attitudes and risk factors of 5-17 years old kids and 12-17 years.		6	15	0.969
Section 11. Dental assistance sources.		4	4	0.609
Section 12. Preventive visit for pregnant women.		3	2	0.720
Section 13. Oral health related quality of life in 8-17 years old kids.		6	5	0.998
Section 14. Orthodontic and dental traumas.		13	6	0.133
<i>Total considering all sections</i>		<i>127</i>	<i>134</i>	<i>0.784</i>

Table 1 - Analysis of the questionnaire by sections: number of questions, number of items and value of Cronbach's alpha.

In section 11 - Dental Assistance Sources - (4 items, alfa 0.609) 97% of the mothers declared that 75.4% of their own children never went to the dentist because of a lack of revealing diseases in the last year.

By the answers in section 4 - Dental health level - (2 items, alfa = 0.586) it shows that 9% of mothers have 20 or more natural teeth and that 98.4% doesn't have dentures.

Mothers that answered section 2 - Attention to oral health of the mother - declared that 63.7% of them never taught their children dental hygiene; 65.8% didn't know if there is a relation between oral health and general health and 65.8% didn't know if a check up by the dentist or hygienist would be useful. 82.6% of the mothers actually do go to the dentist, and brush their teeth carefully. 69.5% think that they can brush their teeth in a satisfactory way without using toothpaste and 84.7% declare that bad breath is a problem that worries them. 75.3% of the mothers also referred to brushing their teeth twice a day, 72.1% brush them less than 2 minutes, and 95.8% use a manual toothbrush. The toothbrush is changed every 6 months by 73.2% of the mothers, 79.5% don't use mouthwash habitually. Floss is used only by 27.4% of the mothers but in 64.2% of cases with a daily frequency. 79.5% of the mothers declared having been to the den-

tist less than a year ago, 84.7% of those, for a check up. 68.1% declared not having a dentist located less than 30 minutes from home or the place of work.

The total value of the alpha of Cronbach, considering the part of questionnaire dedicated only to the mothers that have more than 18 years old children, is 0.490 on 116 items.

In total, considering all the sections of the questionnaire on 134 items and 127 questions, we get an alpha value of 0.784.

Discussion

The World Health Organization asked to begin campaigns for the promotion of healthy lifestyles aimed at the promotion of corrective intervention to these "modifiable" risk factors that are at the base of the major incidents of serious diseases (24).

Often oral health is considered not relevant (25), instead the correlation between periodontal pathologies, heart disease and adverse pregnancy outcomes is significant; the mechanism that links oral health to the preceding is systemic inflammation (26).

The main goal of periodontal disease prevention is the checkup and inhibition of bacterial plaque creation in the patients, and between the different strategies of preven-

tion the most significant portion of these is about activities that promote dental self-care. The growth and the development of a child is a continuous process that has to create an independent individual (27) and children showed to adopt behaviors and food preferences of their mother since the beginning of infancy (28,29).

Talking about the consumption of sweets, for example, a relationship seems to exist between children's habits and those of their mothers. Also, it was demonstrated that dental health and the socioeconomic state influence children's attitudes and the prevalence of cavities developing (30,31).

In order to prevent cavities and gum diseases maternal support is essential: Sasahara et al. (32) showed that mothers gingival condition, as a result of oral health behavior, had been associated with the prevalence and severity of dental caries in their 3 year old children.

Mothers with regular access to dental care are more inclined to bring their child to the dentist and develop behaviors and habits that promote good dental health (33). In the analysis of the study it emerged that, nonetheless an average, high school level (high school, university) of most of the mothers that took part to the study, there is a lack of attention in many cases to children's health, resulting in a large percentage of subjects being unaware about the dental care of their children, about the diet, and the substances used for disease prevention like fluoride. Some mothers did not even know if in school there is a dental disease prevention program. Even the level of disease state perception is underrated.

Therefore, two fundamental data emerge: an incapability of the institutions to sustain an efficient plan of health promotion and spread in the whole school institute; a lack of information and mostly, assumption of responsibility by the mothers for their own health that reflects itself in an absent participation in their children oral health.

The thoughts brought up by this data is about the necessity for creating a wider awareness of oral health problems on a national level, to prevent complications made by neglect and a lack of selfcare, supporting a path of acquisition of correct lifestyles through the assumption of correct hygienic and dietary behaviors, like periodic dental visits, selfcare, starting a process of empowerment. The first form of education to children's health should be learned by the mother, the maternal/infancy consultants during pregnancy continuing then in school no matter what the level is. The assumption of responsibility and the voluntary embrace of a healthy lifestyles by the parents, particularly the mother would assume consequentially an important educational model for children. The questionnaire for the mothers showed a good reliability and it seems it made good results in terms of internal coherence and validity. The online administration allowed the opportunity to optimize the data collection avoiding complications with papers and it offers potentially, a tool able to rapidly gather a vast sample in which to perfect other studies.

The study represents a preliminary study aimed at testing the validity of the questionnaire and after that widening the survey in order to not obtain any equivocal re-

sults about the evaluation of risk that mothers' behaviors may have on their children's dental health.

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