

Oral health-related quality of life in women participating in the “More Smiles for Chile” dental program

Calidad de vida relacionada con la salud oral en mujeres participantes del programa odontológico “Más sonrisas para Chile”

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ABSTRACT

Introduction: oral health problems are not only a manifestation of physical problems, but they also affect psychosocial aspects. The “More Smiles for Chile” program was created to make a change on the quality of life of participating women; however, the assessments usually focus on goals achieved. The aim of the present study was to determine the oral health-related quality of life (OHRQoL) in women who participated in the “More Smiles for Chile” program at the San Pedro Family Health Center. **Method:** a quantitative, descriptive-correlational, cross-sectional study was conducted with a non-probabilistic sample of 120 women. The Oral Health Impact Profile (OHIP) scale and a questionnaire about demographic and dental variables were used to measure OHRQoL. The interviews were conducted at the Family Health Center. **Results:** the most affected components of OHRQoL are psychological discomfort and physical pain. The dimensions with significant changes in OHRQoL were: functional limitation, psychological discomfort, psychological disability, and global perception. **Conclusions:** the More Smiles for Chile program positively impacts the OHRQoL perception in participating women, with significant differences in post-participation averages.

Keywords: oral health, quality of life, women, oral health program, health policies

RESUMEN

Introducción: los problemas de salud bucal no solo manifiestan problemas físicos, sino que además afectan aspectos psicosociales. El programa “Más Sonrisas para Chile” fue creado para generar un impacto en la calidad de vida de las mujeres participantes, sin embargo, las evaluaciones han estado centradas en el cumplimiento de metas. El objetivo del estudio fue determinar la calidad de vida relacionada con la salud oral (CVRSO) en mujeres que participaron en el programa “Más Sonrisas para Chile” en el Centro de Salud Familiar San Pedro (CESFAM). **Método:** se realizó un estudio cuantitativo, descriptivo-correlacional, transversal, con una muestra no probabilística de 120 mujeres. Para medir la CVRSO se utilizó la escala Oral Health Impact Profile (OHIP) y un cuestionario de preguntas sobre variables demográficas y odontológicas. Las entrevistas se realizaron en el propio CESFAM. **Resultados:** los componentes de la CVRSO más afectados son malestar psicológico y dolor físico. Las dimensiones que experimentan cambios significativos en la CVRSO fueron: limitación funcional, malestar psicológico, discapacidad psicológica y percepción global. **Conclusiones:** el programa Más Sonrisas para Chile impacta positivamente en la percepción de la CVRSO de las mujeres participantes, con diferencias significativas en los promedios posparticipación.

Palabras claves: salud bucal, calidad de vida, mujeres, programa de salud bucal, políticas de salud

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INTRODUCTION

Health problems affecting the oral cavity (caries and periodontal diseases) are a public health problem because of the associated social and health effects.¹⁻³ The mouth allows people’s social development, and problems associated with oral health reduce the quality of life of the most affected people. Oral diseases remain highly prevalent in unprotected population groups, including women.⁴ While oral health problems are preventable, they are chronic diseases that have a strong social pattern, reflecting the countries’ economic and social inequalities and inequities.^{3,5} Oral health problems cannot only be seen as dental problems, but they should be viewed as a whole;⁶⁻⁸ they affect mortality, overall health, digestion, speech, social mobility, employment, self-esteem, quality of life, and well-being.^{3,9}

Chile’s public oral health policy *“is geared towards the prevention and promotion of oral health of the population, especially on the most vulnerable, and it considers recovery activities in prioritized groups through cost-effective actions based on the most available evidence”*. The demand for care is very high because of the extent of damage to the population and scarce dentist hours, so the State is in need of prioritizing specific age groups, in order to have a long-term health impact.¹¹

The 2018-2030 National Oral Health Plan was launched in 2017 with the mission to *“contribute to raising the health level of the entire population through the National Oral Health Plan, based on the principles of the comprehensive health care model with a family and community approach, strengthening cross-sectorial and social participation with a focus on equity and social inclusion, and promoting the education and development of health teams according to the oral health needs of*

people”. It has four strategic aims, with the fourth emphasizing research, monitoring, and evaluation, including three additional strategic objectives: install a monitoring system of the population’s oral health and its impact on quality of life; improve the quality, relevance and availability of oral health information; and improve the evaluation and monitoring of public health programs.¹²

Regarding this fourth strategic aim, it is important to consider that the assessment of general and oral health policies and programs in Chile is carried out from the perspective of goals achieved (patients’ coverage, admission, and discharge),¹³ with the number of comprehensive discharges performed in the various programs as main indicator.¹⁴⁻¹⁶ This assessment should be carried out beyond what is currently being done, as set out in the 2018-2030 National Oral Health Plan: *“New or reformulated oral health programs should conduct an ex ante evaluation, including program design, monitoring, and evaluation of programs, to see whether they are properly implemented and have the expected impact”*.

Oral health-related quality of life (OHRQoL) is understood as *“the physical, psychological and social well-being in relation to the state of teeth, as well as hard and soft tissues of the oral cavity”*.^{15,17,18} In this regard, some population measurements have been made in Chile. The 2015-2016 Quality of Life and Health Questionnaire (Encuesta de Calidad de Vida y Salud, ENCAVI 2015-2016) included a question related to oral health and its perceived effect on quality of life, with 13.8% of respondents saying almost always/always, 14.3% sometimes, 13.5% rarely and 57.5% never. This survey found significant differences for the “never” category in people over 65 years of age, compared to the 2006 ENCAVI.¹² Later, the 2016-2017

National Health Survey measured oral health perception, with 40.2% of people considering their oral health to be poor, while 13.6% considered it bad or very bad; there were differences by age groups, with the older having a worse perception, and differences by years of studies, showing that the lower the level of studies, the worse the perception of oral health.²

Chile’s oral health policy has striven for a gender and equity approach to health programs (Ministerio de Salud, MINSAL 2018). Internationally, women are reported to perceive the negative and positive social impacts of oral health more strongly.¹⁹ It has been shown that women have certain oral health disadvantages as they have a higher risk of cavities than men, which is associated with a variety of factors ranging from hormonal changes in gestation, saliva flow and composition, and sociodemographic factors.^{2,15,20} While the MINSAL has created women-focused programs, there are still gender differences in the impact of oral health on social aspects, which have been underreported in Chile.

There is a positive association between health and quality of life, meaning that with higher health there should be a higher quality of life, but since both concepts are multifactorial, it is not such a simplistic relationship. The quality of life of people with chronic diseases is highly affected as their health conditions, or the problems associated with them, persist for a long time, even for life; diagnosing these diseases affect various aspects of life (depending on the severity of this disease) not only for individuals and their families, but often for the community as well.²¹ Oral health is an influential factor in quality of life; it can affect the activities of a person’s daily life from eating to relating to others.^{15,17} Evidence

suggests that oral health is a significant component in the overall quality of life of individuals, with significant implications for the overall health status.^{15,17,19}

In Chile, the “More Smiles for Chile” strategy for vulnerable women was created in 2014. This program aims to “recover the smile and oral health of Chilean women, promoting self-care, improving self-esteem and promoting social reintegration”. The beneficiary population are women over the age of 20, users of the public health system and other state social programs, but also by local demand if room is available. The benefits provided by this program include oral health examination, education, restorations, tartar removal and prophylaxis, extractions, and removable prostheses (the latter two, if necessary).²⁰

The San Pedro Family Health Center (CESFAM), located in the community of San Pedro de la Paz in the region of B o-B o, Chile, has a user population of nearly 30,000 people. The dental area runs the dentistry programs, including “More Smiles for Chile”. The main route of entry into this program in this CESFAM is through local demand.

The main purpose of this study was to determine the OHRQoL before and after participating in the program, and to establish a relationship with sociodemographic variables and specific dental problems in a group of women participating in the “More Smiles for Chile” dental program during 2018.

METHOD

This was a quantitative, cross-sectional study. The study population consisted of 237 women participating in the More Smiles for Chile program and who completed treatment

(comprehensive discharge) during the year 2018 at CESFAM San Pedro, in the community of San Pedro de la Paz. For the selection of participants, project information and invitation were provided via telephone, a process that was supported by CESFAM dental staff. The sample was non-probabilistic and for convenience, seeking more than 100 cases in order to achieve some normal distribution of the general characteristics of the program’s user population. The final sample was 120 women who voluntarily agreed to participate. Data collection was carried out during the second half of 2019, initially with face-to-face interviews and later by telephone due to the social unrest in the country.

The instrument applied to measure oral health-related quality of life was the Oral Health Impact Profile, Spanish version with 7 questions (OHIP-7Sp), which was applied at program entry and afterwards. This version is validated for the adult population in Chile.²² The variables were divided into seven theoretical domains, namely functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. The answers are based on the Likert scale (0 = never, 1 = almost never, 2 = occasionally, 3 = quite often, and 4 = very often). Severity is determined by the sum of all item scores, with the highest scores showing the greatest negative impact perceived by respondents.^{23,24,25} The final score is shown as “low impact” = 0 (good perception of oral health-related quality of life) and “high impact” > 0 (poor perception of oral health-related quality of life). A global categorization was also developed to establish certain ranges of OHRQoL OHIP-7 and not just two categories as proposed by the authors, like this: no impact on OHRQoL (0 points); low (1 to 7); moderate (8 to 14);

high (15 to 21); very high impact on OHRQoL (22 to 28).

Information on demographic and dental characteristics was extracted from the CESFAM’s individual data sheets and the More Smiles for Chile program.

For data analysis, version 25 of the SPSS statistical software was used, applying univariate statistical tests (averages and dispersion measures) and Student’s *t* test for intragroup mean difference.

This study was approved by the Scientific Ethics Committee of Concepci n’s Health Service (Code CEC19-0635), with information provided to participants in addition to consent to participate.

RESULTS

The sample studied consisted of women of various ages, mostly between 35 and 74 years of age, with an average of 54.5 years (SD 15.5). The education level was complete high school in 36.7% (44) and complete and incomplete basic education in equal number of cases; the youngest women are the ones with the highest level of education. Most report being married, and about 20% are single, with the group of youngest women in this condition, compared to other age groups.

Concerning their dental condition, 61.2% had non-functional teething, i.e., they have less than 20 dental units in mouth, so the treatment performed in about 56% of cases was operatory, tartar removal, and removable prosthesis simultaneously, mainly in women aged 60 and older (over 70% of these groups), followed by operatory-tartar removal in 28% of cases, mostly in the group of women under 35 years of age (68.8% of them) (Table 1).

Table 1. Percentage distribution: demographic and dental characteristics of women participating in the More Smiles for Chile program

	Age				Total
	20 to 34 years	35 to 59 years	60 to 74 years	75 years and over	
Schooling	% (fi)	% (fi)	% (fi)	% (fi)	% (fi)
Incomplete and complete basic education	6.3 (1)	22.6 (18)	33.3 (13)	66.7 (6)	33.4 (40)
Incomplete high school	6.3 (1)	13.2 (7)	5.1 (2)	8.3 (1)	9.2 (11)
Complete high school	18.8 (3)	49.1 (26)	33.3 (13)	16.7 (2)	36.7 (44)
Incomplete higher education	18.8 (3)	0 (0)	15.9 (7)	0 (0)	8.4 (10)
Complete higher education	50 (8)	3.8 (2)	10.3 (4)	8.3 (1)	12.5 (15)
Total	100 (16)	100 (53)	100 (39)	100 (12)	100 (120)
Marital status	% (fi)	% (fi)	% (fi)	% (fi)	Total
Single	37.5 (6)	20.8 (11)	15.8 (6)	0 (0)	19.3 (23)
Married	62.6 (10)	58.5 (31)	55.3 (21)	50 (6)	57.1 (63)
Divorced	0 (0)	18.9 (10)	7.9 (3)	0 (0)	10.9 (13)
Widow	0 (0)	1.9 (1)	21.1 (8)	50 (6)	12.6 (15)
Total	100 (16)	100 (53)	100 (38)	100 (12)	100 (119)
Functional dentition	% (fi)	% (fi)	% (fi)	% (fi)	Total
Non-functional	100 (16)	79.2 (42)	37.5 (15)	8.3 (1)	61.2 (74)
Functional	0 (0)	20.8 (11)	62.5 (25)	91.7 (11)	38.8 (47)
Total	100 (16)	100 (53)	100 (40)	100 (12)	100 (121)
Treatment	% (fi)	% (fi)	% (fi)	% (fi)	Total
1 Operator-tartar removal	68.8 (11)	30.2 (16)	15.0 (6)	8.3 (1)	28.1 (34)
2 Operator-tartar removal-prosthesis	25.0 (4)	49.1 (26)	70.0 (28)	83.3 (10)	56.2 (68)
3 Operator-tartar removal-prosthesis-extraction	6.3 (1)	20.8 (11)	15.0 (6)	8.3 (1)	15.7 (19)
Total	100 (16)	100 (53)	100 (38)	100 (12)	100 (119)

Source: by the authors

Oral health-related quality of life (OHRQoL): before and after participating in the More Smiles for Chile program

According to this group of women’s assessment of the effect of their dental situation on each dimension included in

the OHRQoL scale (OHIP-7sp) before and after treatment, most (57% to 83%) say they have “never” experienced these situations in the areas of functional limitation, physical disability, psychological or social disability or in feelings of handicap, except in physical pain and psychological discomfort (Table 2).

Table 2. Percentage distribution. Oral health-related quality of life (OHIP-7sp): before and after participation in the More Smiles for Chile Program

PRE-OHRQoL DIMENSION (OHIP-7Sp)	Never	Almost never	Sometimes	Often	Always	Total
	% (fi)	% (fi)	% (fi)	% (fi)	% (fi)	% (fi)
Functional limitation	58.7 (71)	6.6 (8)	19 (23)	7.4 (9)	6.6 (8)	98.3 (119)
Physical pain	23.1 (28)	14.9 (18)	38.0 (46)	15.7 (19)	6.6 (8)	98.3 (119)
Psychological discomfort	27.3 (33)	13.2 (16)	20.7 (25)	15.7 (19)	21.5 (26)	98.3 (119)
Physical disability	69.4 (87)	3.3 (4)	19.0 (23)	1.7 (2)	4.1 (5)	98.3 (119)
Psychological disability	57.0 (69)	12.4 (15)	17.4 (21)	8.3 (10)	3.3(4)	98.3 (119)
Social disability	74.4 (90)	6.6 (8)	11.6 (14)	4.1 (5)	1.7 (2)	98.3 (119)
Handicap	83.5 (101)	5.8 (7)	5.0 (6)	3.3 (4)	0.8 (1)	98.3 (119)
POST-OHRQoL DIMENSION (OHIP-7Sp)	Never	Almost Never	Sometimes	Often	Always	Total
	% (fi)	% (fi)	% (fi)	% (fi)	% (fi)	% (fi)
Functional limitation	80.2 (97)	8.3 (10)	9.1 (11)	0.0	2.5 (3)	100 (121)
Physical pain	30.6 (37)	14.0 (17)	33.1 (40)	11.6 (14)	10.7 (13)	100 (121)
Psychological discomfort	47.1 (57)	13.2 (16)	23.1 (28)	4.1 (5)	4.0 (15)	100 (121)
Physical disability	65.3 (79)	5.0 (6)	23.1 (28)	4.1 (5)	2.5 (3)	100 (121)
Psychological disability	71.9 (87)	11.6 (14)	14.0 (17)	0.0	2.5 (3)	100 (121)
Social disability	73.6 (89)	7.4 (9)	16.5 (20)	1.7 (2)	0.8 (1)	100 (121)
Handicap	77.7 (94)	8.3 (10)	12.4 (15)	0.8 (1)	0.8 (1)	100 (121)

Source: by the authors

In these two latter areas, particularly psychological discomfort is where 21.5% recognize that dental problems “always” make them feel totally unhappy and 15.7% admits that this happened frequently. Physical pain concentrates 22% of cases with “always” or “often” responses. In terms of psychological disability and social disability, even though most respondents said “never”, there is a significant percentage of women (20 to 30%) responding “sometimes” or “always”, experiencing situations of interruption of their usual work due to dental problems (Table 2).

After participating in the program, the same trend is observed in the responses for each dimension; the percentage of women who respond “never” remains high, although now it is over 60%, except in terms of physical pain and psychological discomfort. In all dimensions, there is a decrease in cases

initially responding “often” or “always” regarding the effects on OHRQoL (Table 2).

Table 3 shows that at the time of starting the program, nearly 92% of participating women identify some effect of dental problems on their OHRQoL (low, moderate, or high impact). 55% of these cases show low impact, and in 37% this level is moderate to very high. When comparing the results obtained after participating in the program, the percentage of women who consider that it does not have an impact on their OHRQoL doubles; while the percentage of women who recognize some degree of impact (low) remains the same. This decrease is also seen in those who had a moderate to high impact, falling from 36.9% to 29.7%; there is low, direct, and significant correlation at the OHRQoL level before and after participating in the program ($p<0.033$) (Table 3).

Table 3. Percentage distribution: level of effects in oral health-related quality life (OHRQoL): before and after participating in the More Smiles for Chile program

Level of effects in oral health-related quality of life	Before		After	
	fi	%	fi	%
No impact OHRQoL	9	7.6	15.1	15.1
Low impact on OHRQoL	66	55.5	54.6	54.6
Moderate impact on OHRQoL	33	27.7	2.52	2.52
High impact on OHRQoL	11	9.2	5.0	5.0
Total	119	100.0	119	100.0

Gamma = 0.287 $p < 0.033$

Source: by the authors

When comparing the means for each dimension of the OHRQoL scale, these averages are reduced in 6 of the 7 components, except in “social disability”; per the Student’s *t* test, these differences are significant in terms of functional limitation ($p < 0.000$), psychological discomfort ($p < 0.000$), and psychological disability ($p < 0.002$). This also occurs in comparing the global averages of this scale ($p < 0.005$), where the average decreased from 6.93 to 5.23, representing a favorable difference in the overall OHRQoL effect by 24.67% (Table 4).

Table 4. Mean differences in oral health-related quality of life: before and after women’s participation in the More Smiles for Chile dental program (n=119)

Dimension	Initial Average (SD)	Average after participation (SD)	Mean difference	Typical Deviation	t	gl	Sig (bilateral)
Functional limitation	0.9496(1.31)	0.3697 (0.85)	-0.580	1.435	4.408	118	0.000
Physical pain	1.6722 (1.19)	1.5798 (1.32)	-0.092	1.426	0.707	118	0.481
Psychological discomfort	1.9076 (1.51)	1.2353 (1.4)	-0.672	1.846	3.972	118	0.000
Physical disability	0.6639 (1.13)	0.7459 (1.11)	0.084	1.394	-0.658	118	0.512
Psychological disability	0.8656 (1.18)	0.4958 (0.92)	-0.370	1.255	3.215	118	0.002
Social disability	0.4958 (0.97)	0.4958 (0.89)	0.000	1.089	0.000	118	1.000
Handicap	0.2941 (0.79)	0.3949 (0.81)	0.101	1.003	-1.096	118	0.275
Global Quality of Life	6.9328 (5.23)	5.3193 (4.86)	-1.613	6.091	2.887	118	0.005

Source: by the authors

Oral health-related quality of life and associated variables

The comparisons of OHRQoL with demographic variables did not show significant differences in any of them; however, when making intragroup comparisons in persons over 50 years of age, there were significant differences in OHRQoL averages post-participation ($p < 0.000$); the same is

true for those with basic schooling, who improved their quality of life perception post-participation ($p < 0.0001$). On the other hand, regarding dental variables, women with dental functionality problems ($p < 0.006$) and dental treatment requiring dental operation-tartar removal and prosthesis ($p < 0.001$) are groups with significant differences in OHRQoL averages before and after participating in this program (Table 5).

Table 5. Mean differences in oral health-related quality of life: before and after participation in the program according to dental and demographic variables (intragroup)

	Initial Average	Average after participation	Average (dif)	SD	gl	t	Sig. (bilateral)
Dental functionality							
Non-Functional (n=74) (20 or more missing dental parts)	8.000	5.7703	2.2297	6.704	73	2.861	0.006
Treatment type							
Dental operation-tartar removal-prosthesis (n=67)	8.0448	5.4478	2.5970	6.0629	66	3.506	0.001
Origin of care request							
Local request	7.4194	4.9032	2.516	5.2246	92	4.644	0.000
Age (Group)							
50 to 74 years (n=70)	7.9750	4.9500	2.700	5.744	69	3.933	0.000
Schooling							
Basic (n=40)	7.9250	5.0750	2.8500	5.2553	39	3.430	0.001

Source: by the authors

Regarding other associations, there was low and significant correlation of previous OHRQoL and the DMFT index-dental functionality ($r=0.192$ $p<0.036$).

DISCUSSION

Oral health does have a negative impact on women’s quality of life as the results of this study show. The most affected OHRQoL areas are psychological discomfort and physical pain both before and after participating in the program, although the impact averages after such participation decrease. Following the original ranking of the OHIP-7sp scale, 92% of women initially experienced some level of impact on their OHRQoL (overall score above 0); however, this figure decreased and now only 84.3% recognize some oral health impact on their OHRQoL. Moya et al (2019) found that the impact prior to Explicit Health Guarantee (EHG) dental treatment on the oral health of adults aged 60 years happened in 97% of cases.¹⁷ It is also possible to add that the average impact on quality of life decreases in

63% of women and remains unchanged in 5%; this improvement in perception is significantly higher in the group of women aged 60 and older, and “gets worse” mostly in younger women, particularly in those under the age of 35 (56% of these).

In analyzing the results by OHRQoL dimensions, it was found that, in addition to the overall measurement, there was a decreased average impact on 4 of the 7 OHRQoL dimensions, with significant differences in functional limitation ($p<0.000$), psychological discomfort ($p<0.000$) and psychological disability ($p<0.002$), as well as overall perception of quality of life ($p<0.005$), the latter representing a 26.46% reduction in average impact. Physical disability and handicap slightly increase in average, but this variation is not significant. These results are consistent with the findings by Le n (2019), Moya (2019) and Roselt et al (2013, in D az et al 2017),^{15,17,19} where there was also an improvement in women’s OHRQoL,^{14,16} as well as in Ahumada (2016), who conducted a study on the More Smiles for Chile program, finding out higher impact

levels on “psychological discomfort” and “physical pain”.²⁶

On the other hand, there were significant differences in age and schooling regarding OHRQoL in intragroup comparisons only; women aged 50 and older and those with basic studies improve the average in perception of quality of life after participating in the program. Younger women (under 30) have lower averages than other age groups and are the only ones with increased OHRQoL averages post-program; however, these differences are not significant. This situation is consistent with the results by Sabando et al (2019), who found a statistically significant and inverse association between OHRQoL and age.¹⁸ Another significant variation in OHRQoL perception was in those with dental functionality problems and those who had more complex dental treatment (operation-tartar removal and prosthesis); in both cases, these women improved their perception after participating in the program. This is consistent with the findings by Diaz-Reissner et al.¹⁹ In studying older adult women in South Korea, Dong-Soo (2008) found that health-related quality of life was low and associated with fewer teeth in place.²⁷ In studying pregnant women in Brazil, Moimaz (2016) found a strong association between higher OHIP score (worse OHRQoL) and the presence of decayed tissue and tooth loss.²⁸

In 2011, Cohen-Carneiro et al conducted a systematic review on the impact of oral health on quality of life and its association with social factors, concluding that the social conditions mostly associated with the negative impact on oral health-related quality of life were: female, poor education, and low income.²⁹

The above-mentioned results require further analysis to produce new evaluations in this regard, as a key activity to understand and improve programs and policies aimed at improving oral health and consequently the comprehensive health of women in Chile. This research provides relevant information as scientific support for the evaluation of the More Smiles for Chile dental program. In addition, it provides support for future programs including quality of life as their main objective, carefully caring for their users.

CONCLUSION

The More Smiles for Chile program improves the oral health-related quality of life of participating women. There are significant changes in three of its specific components, as well as globally. There is a reduction in the level of oral health impact on OHRQoL. And this in turn has an impact on the evaluation of the effectiveness of treatments.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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