Differences in responses to the Oral Health Impact Profile (OHIP14) used as a questionnaire or in an interview

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Abstract: The objective of this study was to compare the completion rates and performance of the Brazilian version of the Oral Health Impact Profile (OHIP14) when applied as an interview or in its original self-reported form. A convenience sample of 74 adult patients was selected in a Dental Clinic (University of Araras, Brazil). One examiner administered the instrument in both formats to participants with an interval of 2 weeks between each administration. Data about dental health condition and socioeconomic status were collected and associated with total OHIP14 scores in both formats using linear regression analyses. No differences were found in the total scores and in each subscale of the OHIP14 according to the form of administration. Higher values of completion were found in the interview format. More severe impacts were recorded in the interview format than in the questionnaire format. Higher values of total OHIP-14 scores in both formats were related to the presence of dental caries. Total OHIP14 scores were not influenced by the method of administration. However, the use of the OHIP14 in the questionnaire format may result in lower completion rates and loss of data.

Descriptors: Public health; Quality of life; Interview; Questionnaire.

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Introduction

An important issue related to data collection for epidemiologic or cross-sectional studies is choosing the best method of administering an instrument.[1] Different methods of administration such as self-complete questionnaires or interviews have been suggested when considering Oral Health Related Quality of Life (OHRQoL) instruments. Although these instruments have been used in many populations under a variety of circumstances, little is known about the influence of the method of administration on its psychometric properties and on the subject's response rates.[2,3]

Several instruments measuring OHRQoL have been developed to minimize cultural and social disparities and also to provide measures that surpass the biomedical models.[4-9] The Oral Health Impact Profile-short form (OHIP14) is one of the OHRQoL instruments that have been widely used in several cross-sectional and longitudinal studies.[10-13] It is divided into 7 subscales, grouping functional limitation, physical pain, psychological discomfort, physical and psychological disabilities and handicap.[13-15]

When considering the methods of administration, the use of questionnaires in research to assess OHRQoL presents substantial advantages such as lower cost, preservation of the anonymity of the participants and reduction of biases that can occur in the interaction with the interviewer. On the other hand, the potential for lower response rates exists when this form of administration is used.[16] The form of administration generally does not appear to influence the total scores of the instrument when it is applied in an elderly population.[16,17]

Although the influence of form of administration on the response rate and total score of the OHIP14 has been previously tested using a cross-sectional design,[16] we planned to test this hypothesis using a cross-over methodology which provides a more realistic assessment of those statements. Furthermore, there are no available data on the implications of the form of administration of an OHRQoL instrument among Brazilians, as well as on its influence on response rates. The aim of the present study was to compare completion rates and performance of the Brazilian version of the OHIP14 when applied as an interview or in its original self-reported form.

Method

The ethics committee of the participating institution approved this study and consent was obtained from each subject.

Sampling

Since there are no available data involving the completion rates of questionnaires among Brazilians, a convenience sample was selected among patients attending the adult Dental Clinic, Hermínio Ometto University Center, University of Araras (UNIARARAS), Araras, SP, Brazil. Araras has an estimated population of 104,196, and the industrial sector is the city's main economic source. The adult dental clinic of the UNIARARAS has been attending an estimated population of two hundred new patients per semester, mainly from a low socioeconomic background. For this study, all patients aged 30 years and over during the period of the study (between May and June of 2006) were invited to participate. Participants who were included had no medical condition, and participants with mental and physical impairments were excluded from the research.

Study design

The subjects were invited to participate and were randomly allocated into two equal-sized groups (Group A – GA and Group B – GB) based on the format taken in the first week of the study, interview or questionnaire. A random assignment approach was taken using the Research Randomized Program (available at: *http://www.randomizer.org/form.htm*) to generate random numbers, giving all participants an equal chance of being assigned to each experimental condition. In a second administration, participants responded the other form of the OHIP14. Postal reminders were sent two days after the first administration for those who previously agreed to participate in the study. Participants were contacted by phone two days before the second visit to respond the other form of administration of the OHIP14 and any remaining non-respondents were dropped from the sample used in the analysis. There was an interval of 2 weeks between the first and second admin-

istrations to avoid memory bias. The study profile is presented in Figure 1.

Questionnaire, interview and clinical examination

All the participants were approached by one examiner previously trained. Theoretical and clinical training was arranged for a total of 12 hours. During the training process, a sub-sample of ten patients responded the OHIP14 using both the questionnaire and interview forms with a one-week interval between each form of administration in order to assess the feasibility of the methodology.

The interviews were conducted before the appointments with both the interviewer and interviewee seated facing a horizontal work surface, in the waiting room. Cue cards listing the possible responses were used to guide the participants.[16] Those assigned to the questionnaire group also completed the self-administered instrument before their appointments in the waiting room according to their own judgment.

In order to evaluate predictors of OHIP14 scores in the different formats, data about socioeconomic and demographic characteristics were collected. Data related to the presence of dental caries were collected for the same previously calibrated examiner (intraexaminer kappa value: 0.98).

Data analyses

After the second administration, data from the OHIP14 were compared considering the response rates and total scores in each method (interview or questionnaire). Two definitions of completion were used:

- Complete - if there was a response to every applicable item;
- and incomplete - if there were one item or more to which the participant had not responded.[13,16]

OHIP14 total scores were calculated by the additive method[18,19], and the differences between the mean scores from each format were compared using the Wilcoxon rank test ($p < 0.05$). Cohen's kappa statistic coefficient was used to assess the agreement between each question of the OHIP14 in both methods of administration. The chi-square test was used to determine the differences between each OHIP14 health dimension in each format. The influence of

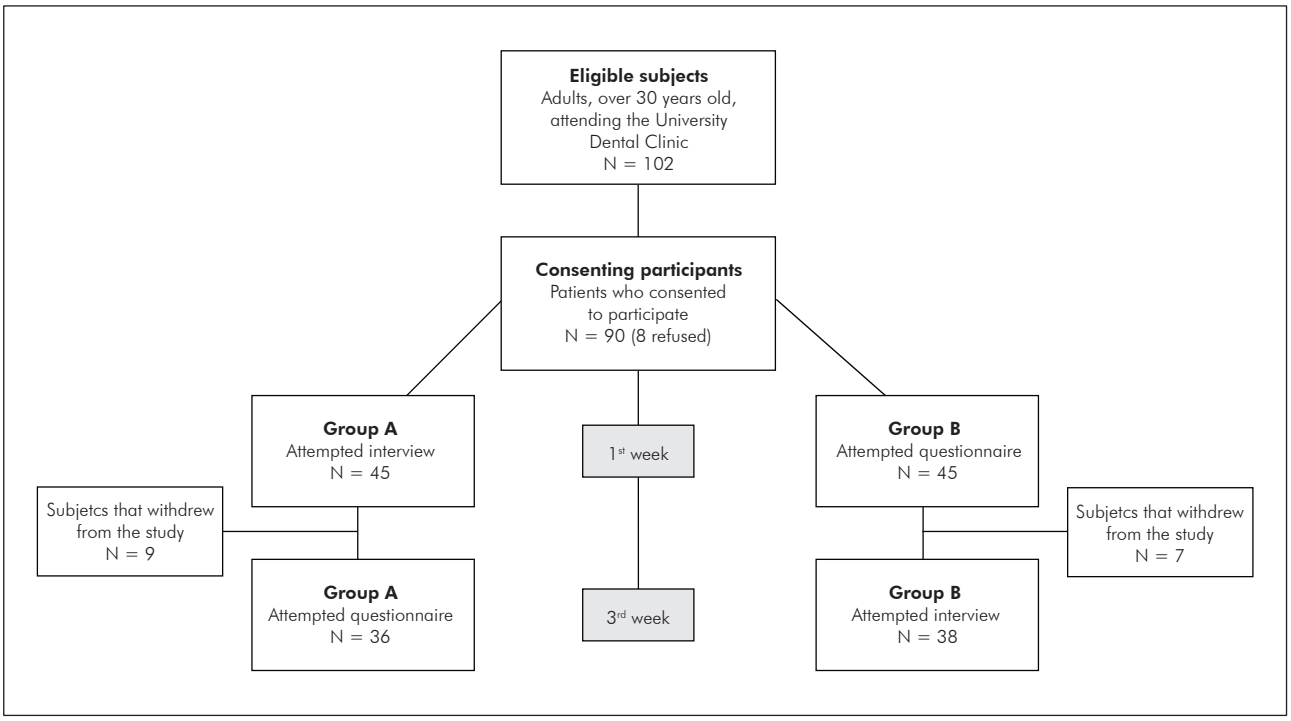

Figure 1 - Study profile.

oral health conditions and socioeconomic status on total OHIP14 scores was analyzed by the Mann-Whitney rank test ($p < 0.05$). Before the analyses, the Kolmogorov-Smirnov normality test was performed. All the analyses were performed using the SPSS software v. 11.0 (SPSS Inc, Chicago, IL, USA).

Results

One hundred and two adults attending the Dental Clinic were invited to participate (Figure 1). Four subjects did not fulfill the inclusion criteria and were excluded: three patients had mental impairments and one was unable to read the questionnaire. Eight eligible subjects refused to participate (7.8%). Ninety subjects consented to participate and were assigned to either the questionnaire or to an interview. Seventy-four subjects completed the second phase of the study yielding a participation rate of 82.2%. The dropouts were equally distributed in the two groups (Figure 1) ($p > 0.05$, chi-square test). No differences were found between the dropout subjects according to which form was administered first, questionnaire or interview, in relation to the presence of dental caries, gender and socioeconomic status ($p > 0.05$, chi-square test).

Clinical and demographic characteristics of the subjects according to the form of administration of the OHIP14 attempted first are presented in Table 1. Participants were mainly women (60.8%), with low educational level (67.6%) and low income (58.1%). No differences were found between the subjects allocated in the questionnaire or the interview group regarding the presence of dental caries, income, gender and educational level (chi-square test).

Table 2 summarizes the total scores and completion rates of the OHIP14 in both formats. No difference was found in OHIP14 total scores according to form of administration ($p > 0.05$). Higher values of completion were found in the interview ($p < 0.05$). Non-completion of one or more items of the OHIP14 was associated with administration as a questionnaire. Agreement between each question of the OHIP14 when used as a questionnaire or interview was low. Kappa values ranged from 0.20 to 0.65 (Table 3).

Mean scores in each subscale of the OHIP14 when applied in the two formats are presented in Table 4. No difference in each subscale was found regarding the administration formats. The mean number of impacts (total scores) in the questionnaire

Table 1 - Demographics and clinical characteristics of the subjects according to the group allocated.

Factors*		Questionnaire first n (%)	Interview first n (%)	Total n (%)
Dental status (p = 0.24)	with dental caries	18 (45.0)	22 (55.0)	40 (54.1)
	without dental caries	20 (58.8)	14 (41.2)	34 (45.9)
Income (p = 0.46)**	≤ 3BMW	23 (53.5)	20 (46.5)	43 (58.1)
	> 3BMW	12 (44.4)	15 (55.6)	27 (36.5)
Educational level (p = 0.74)	until primary school	25 (50.0)	25 (50.0)	50 (67.6)
	until high school	13 (54.2)	11 (45.8)	24 (32.4)
Gender (p = 0.95)	Male	15 (51.7)	14 (48.3)	29 (39.2)
	Female	23 (51.1)	22 (48.9)	45 (60.8)

*p values: Difference between questionnaire and interview (chi-square); **missing values for Income; BMW = Brazilian minimum wage.

Table 2 - Total scores and response rates of the OHIP 14 in the interview and questionnaire formats.

	Total score*			Completion rates	
	Mean (95%CI)	SD	Median (95%CI)	Complete	Incomplete
Interview	11.6 (8.9–14.3)	11.7	8 (4.2–10.8)	74 (100)	0
Questionnaire	12.7 (10.1–15.3)	11.5	11.5 (6–14.7)	62 (83.8)	12 (16.2)+

*p = 0.07 (Wilcoxon Rank test); +p < 0.05 between different formats (chi-square test).

Table 3 - Agreement between each question of the OHIP14 used as a questionnaire or interview.

Questionnaire *versus* Interview	Kappa (95%CI)
Question 1	0.65 (0.52-0.85)
Question 2	0.61 (0.41-0.83)
Question 3	0.61 (0.47-0.75)
Question 4	0.55 (0.39-0.72)
Question 5	0.50 (0.40-0.71)
Question 6	0.52 (0.37-0.74)
Question 7	0.49 (0.39-0.68)
Question 8	0.51 (0.34-0.69)
Question 9	0.40 (0.25-0.51)
Question 10	0.38 (0.26-0.42)
Question 11	0.45 (0.31-0.52)
Question 12	0.32 (0.15-0.46)
Question 13	0.21 (0.11-0.37)
Question 14	0.20 (0.10-0.81)

format was 12.7 (SD = 11.2) and 11.6 (SD = 11.7) when the form of administration was the interview.

More severe impacts were recorded for participants completing the interview than for those responding the questionnaire (Table 5). In general, higher percentages of "very often" and "fairly often" were reported in the interview format (Table 5). Total OHIP14 scores were associated with dental caries in both forms of administration (Table 6).

Discussion

In this study, the form of administration of the OHIP14 did not influence its total scores (Table 2). This is in accordance with a previous study with a consecutive sample of patients attending a primary care department at a dental hospital.[16] However, in that study, participants were allocated to different groups according to whether they received the instruments (OIDP - Oral Impact on Daily Performance or OHIP 14) as a questionnaire or interview and the order of administration of the instruments. Therefore, people received only one of the formats of the instruments.

According to the design of the present study, respondents should participate at two different times, answering the OHIP14 in both the questionnaire and interview formats. This is an advantage in this kind of approach because a comparison can be made in the same participants, thus avoiding bias.

Table 4 - Mean scores in each OHIP 14 sub-domain in both administration formats.

Sub-domain	Questionnaire Mean (95%CI)	Interview Mean (95%CI)	p*
Functional limitation	1.1 (0.7-1.5)	1.1 (0.7-1.5)	0.76
Physical pain	2.7 (2.2-3.2)	2.6 (2.0-3.2)	0.70
Psychological discomfort	2.7 (2.1-3.3)	2.6 (2.0-3.3)	0.82
Physical disability	1.4 (1.0-2.4)	1.3 (0.8-1.8)	0.62
Psychological disability	2.0 (1.5-2.5)	2.0 (1.5-2.6)	0.96
Social disability	1.5 (1.1-2.0)	1.1 (0.6-1.5)	0.14
Handicap	1.2 (0.8-1.6)	0.9 (0.5-1.3)	0.19

*Wilcoxon Rank test.

When the response rates were compared, there were higher response rates for the interview than for the questionnaire (Table 2). This was similar to the findings of Robinson *et al.*[16] (2001) in relation to the administration of the Oral Impacts on Daily Performance (OIDP). When the OHIP14 was applied, however, those authors reported high completion rates for both the interview and questionnaire formats.

The Data reported here suggest that higher completion rates related to the interview could be linked to the educational level of the participants. Therefore, linguistic and literacy impairments could have affected the participants when answering some questions in the questionnaire format. Another point that needs to be taken into account is that we used a face-to-face method in the interview. It has been suggested that face-to-face interviews are related to higher response rates.[16] However, the administration of interviews requires more time and resources than the use of questionnaires. The latter presents some advantages such as removing the interaction with the interviewer, which could be a source of bias, and allowing the participants to take a longer time to answer the questions.

No difference was observed in mean scores in each OHIP14 subscales in both administration formats, but more severe impacts were reported when the interview was applied (Tables 5 and 6). This

Table 5 - Percentage reporting one or more items by OHIP 14 sub-domain in the interview and questionnaire formats.

	Questionnaire		Interview	
	a	b	a	b
Functional limitation	39.2	4.0	28.4	12.2
Physical pain	68.9	17.5	58.1	29.7
Psychological discomfort	52.7	31.0	39.2	35.1
Physical disability	41.9	12.2	28.4	14.9
Psychological disability	54.0	14.9	41.9	27.0
Social disability	46.0*	6.7	23.0*	13.5
Handicap	41.9*	12.2	16.2*	13.5

a = percentage reporting items "fairly often", "occasionally" and "hardly ever"; b = percentage reporting items "very often" and "fairly often"; * statistically significant differences: $p < 0.05$ (chi-square test).

could have occurred principally because of the interaction with the interviewer.[16]

In general, the Kappa coefficient was low, showing that the instrument's agreement varies according to the method of administration (Table 3). However, the validation of an instrument should be considered carefully when different methods of administration are used since these modifications could interfere in its psychometric properties. Although agreement between each method of administration was low, the highest Kappa values were found in the first questions, demonstrating that the participants were probably already tired when answering the last questions. This fact could be explored in future research.

Total OHIP14 scores were associated with dental caries in both forms of administration, agreeing with other studies[15,16] (Table 6). No relation was found between socioeconomic factors and total OHIP14 scores, a finding that disagrees with previous authors.[20] This issue could be linked principally to the fact that the sample in the present study was socioeconomically homogeneous.

Data about demographic and socioeconomic characteristics of the patients were collected to exclude them as confounders of the relationship between instrument format and the outcomes variables. As the aim of this study was to evaluate the influence of the forms of administration in the OHIP14 total score and completion rates, the possible interaction between factors involving patient

Table 6 - Association between total OHIP 14 scores (mean, 95%CI) for the interview and questionnaire formats with the patient's socioeconomic status and dental condition.

Factors	Interview	Questionnaire
Dental status*	p = 0.001	p = 0.005
with dental caries	13.4 (9.6-17.2)	14.7 (11.0-18.3)
without dental caries	9.1 (5.5-13.3)	10.4 (6.7-14.1)
Income	p = 0.80	p = 0.84
≤ 3BMW	12.6 (8.8-16.6)	13.9 (10.1-17.8)
> 3BMW	10.7 (6.6-14.7)	11.2 (7.8-14.6)
Educational level	p = 0.41	p = 0.24
until primary school	12.0 (8.5-15.5)	13.4 (9.9-16.3)
until high school	11.0 (6.2-15.1)	12.1 (6.9-16.7)
Gender	p = 0.10	p = 0.07
Male	10.3 (5.7-12.0)	13.2 (8.7-15.3)
Female	13.7 (9.9-17.5)	15.0 (11.5-19.1)

BMW = Brazilian minimum wage; *$p < 0.05$ (Mann-Whitney test).

characteristics were identified and presented.

This study used a convenience sample of patients attending a specific dental clinic, so these results cannot be assumed to apply to the general population. Therefore, the results presented here must be considered with caution. The low sample size could have impacted the results in respect to the influence of method of administration of the OHIP14, especially due to the low power of the statistical test. However, the apparent non-influence of the form of administration on the total OHIP14 scores is in accordance with a previous study.[16] So, the low sample size could not be considered a great bias of the study. Even though, more studies considering these issues are needed, especially in a different social and cultural environment. This could provide important information to improve the quality of the data from OHRQoL instruments.

Finally, these data suggest that the OHIP14 should be used in the interview format to assure satisfactory completion rates and to assess OHRQoL impacts in an appropriate manner. Although total OHIP14 scores are not related to the method of administration, its use in the questionnaire format may result in lower completion rates and consequently loss of data. This is important from a public health

perspective, mainly when OHRQoL measures are incorporated in national surveys and in oral health needs assessment, where the use of feasible instruments to produce reliable data are essential for rational planning, resource allocation and service utilization.

Conclusions

Total OHIP14 scores were not influenced by the method of administration. However the use of the OHIP14 in the questionnaire format may result in lower completion rates and loss of data.

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