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AVALIAÇÃO DA DIMENSIONALIDADE

E DE UM MODELO CONCEITUAL DE

QUALIDADE DE VIDA RELACIONADA À

SAÚDE BUCAL UTILIZANDO A ESCALA

ORAL HEALTH IMPACT PROFILE-14

Camila Mello dos Santos

Porto Alegre, abril de 2013.

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AVALIAÇÃO DA DIMENSIONALIDADE E DE UM MODELO CONCEITUAL DE QUALIDADE DE VIDA RELACIONADA À SAÚDE BUCAL UTILIZANDO A ESCALA *ORAL HEALTH IMPACT PROFILE-14*

LINHA DE PESQUISA: EPIDEMIOLOGIA, ETIOPATOGENIA E REPERCUSSÃO DAS DOENÇAS DA CAVIDADE BUCAL E ESTRUTURAS ANEXAS

Orientador: Prof. Dr. Fernando Neves Hugo

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Porto Alegre, abril de 2013.

DEDICATÓRIA

Aos meus pais, Paulo e Sedanir. A finalização da tese representa a conquista de mais uma etapa da minha vida. Obrigada pela ajuda na realização de todos os meus sonhos e objetivos. Amo muito vocês!

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RESUMO

Poucos estudos têm avaliado a estrutura dimensional do Oral Health Impact Profile-14 (OHIP-14). Análise sobre a dimensionalidade e a adequação do OHIP-14 pode ajudar a melhorar a interpretação deste instrumento. Os objetivos desta tese foram avaliar a dimensionalidade e testar um modelo conceitual de qualidade de vida relacionada à saúde bucal utilizando a escala OHIP-14. A tese foi organizada em 3 manuscritos. O primeiro manuscrito "Comparison of two assessment instruments of the quality of life in older adults" teve como objetivo investigar se existe convergência entre as dimensões da versão abreviada do questionário da Organização Mundial da Saúde sobre Qualidade de vida (WHOQOL-Bref) e do questionário Perfil do Impacto de Saúde Bucal-14 (OHIP-14). Neste estudo, foram avaliados 872 idosos do sul do Brasil. As dimensões dos questionários WHOQOL-Bref e OHIP-14 foram correlacionas por afinidade. Todas as correlações analisadas apresentaram baixa magnitude. Apesar dos questionários WHOQOL-Bref and OHIP-14 apresentarem dimensões relacionadas, eles medem as relações físicas, sociais e psicológicas de maneira diferente. O segundo manuscrito "Oral Health Impact Profile-14: a Unidimensional Scale?" teve como objetivo investigar a estrutura dimensional do OHIP-14. As amostras foram provenientes de dois estudos realizados no Brasil, um no Rio de Janeiro (N=504) e o outro em Carlos Barbosa (N=872). Análises Fatoriais Confirmatória e Exploratória foram realizadas para identificar as dimensões do OHIP-14. As análises fatoriais confirmaram um fator para ambos os estudos. Nossos resultados sugerem que o OHIP-14 é uma escala unidimensional. O terceiro manuscrito "Testing the applicability of a conceptual model of oral health-related quality of life in community-dwelling older people" teve como objetivo testar o modelo conceitual de Wilson e Cleary em relação à qualidade de vida relacionada à saúde bucal. Uma amostra aleatória de 578 idosos do sul do Brasil foi avaliada.O modelo conceitual de Wilson e Cleary foi testado usando a modelagem de equações estruturais, incluindo: edentulismo,

sintomas, estado funcional, percepção de saúde bucal, qualidade de vida relacionada à saúde bucal e variáveis sociodemográficas. No modelo final, o edentulismo foi correlacionado com a insatisfação da aparência dos dentes (r = -0,25). O pior estado funcional foi correlacionado com pior percepção de saúde bucal (r = 0,24). A idade teve um efeito direto no OHIP-14 (r = -0,15). Houve um efeito indireto do sexo no OHIP-14 através do estado funcional (r = 0,12).Os resultados apresentados mostram que, para idosos brasileiros, variáveis como sexo e idade desempenham um papel importante para o entendimento conceitual de qualidade de vida relacionada à saúde bucal. Nossos resultados sugerem que o OHIP-14 não avalia o impacto das condições bucais na qualidade de vida numa perspectiva multidimensional, mas em uma única dimensão. A presente tese demonstrou que há caminhos diretos e mediados entre as variáveis clínicas e não clínicas em relação à qualidade de vida relacionada à saúde bucal.

ABSTRACT

A few studies have evaluated the dimensional structure of Oral Health Impact Profile-14. Further analysis on the dimensionality and the adequacy of OHIP-14 can help improve the interpretation of this instrument. The objectives of this thesis were to assess the dimensionality and testing a conceptual model of oral health-related quality of life using the OHIP-14 scale. The thesis was organized in three manuscripts. The first manuscript "Comparison of two assessment instruments of the quality of life in older adults" aimed to investigate if there is convergent validity between the dimensions of World Health Organization Quality of Life Questionnaire-Brief Version (WHOQOL-Bref) and Oral Health Impact Profile-14 (OHIP-14) questionnaires. In this study, 872 elderly Southern-Brazilians were evaluated. The dimensions of WHOQOL-Bref and OHIP-14 questionnaires were correlated by affinity. All correlations analyzed had a low magnitude. Despite the fact that WHOQOL-Bref and OHIP-14 instruments have related dimensions, they measure physical, psychological and social relations differently. The second manuscript "Oral Health Impact Profile-14: a Unidimensional Scale?" aimed to investigate the dimensional structure of the OHIP-14. Subjects were from Rio de Janeiro (N=504) and Carlos Barbosa (N=872) Studies in Brazil. Exploratory and Confirmatory Factor Analysis were performed to identify the dimensions of OHIP-14. The factor analysis confirmed one factor in both studies. Our findings suggest that the OHIP-14 is a unidimensional scale. The third manuscript "Testing the applicability of a conceptual model of oral health-related quality of life in community-dwelling older people" aimed to test Wilson and Cleary's conceptual model in relation to oral health-related quality of life. A random sample of 578 elderly Southern-Brazilians was evaluated. Wilson and Cleary's conceptual model was tested using structural equations modeling including: edentulism, symptom status, functional health, oral health perceptions, oral health-related quality of life, and sociodemographic variables. In the final model,

edentulism was negatively correlated to dissatisfaction of appearance of their dental prostheses (r= -0.25). The worse functional status was correlated with poor oral health perception (r= 0.24). Age had a direct effect on OHIP-14 (r= -0.15). There was an indirect effect of sex on OHIP-14 via functional status (r= 0.12). The results showed that for elderly Brazilians variables such as sex and age are important in the conceptual understanding of oral health-related quality of life. Our findings suggest that the OHIP-14 may not evaluate the oral impact on quality of life on a multidimensional perspective, but in a single dimension. The present thesis demonstrates that there are direct and mediated pathways between clinical and nonclinical variables in relation to oral health-related quality of life.

Key words: oral health, quality of life, oral health-related quality of life, epidemiology.

APRESENTAÇÃO

A presente tese possui três partes principais:

a) Antecedentes: introdução, revisão da literatura e objetivos.

b) Manuscritos: a tese foi organizada em três manuscritos. O primeiro manuscrito *Comparison of two assessment instruments of the quality of life in older adults* foi aceito para publicação na Revista Brasileira de Epidemiologia. O segundo manuscrito *Oral Health Impact Profile-14: a Unidimensional Scale?* foi aceito para publicação na Cadernos de Saúde Pública. O terceiro manuscrito *Testing the applicability of a conceptual model of oral health-related quality of life in community-dwelling older people* foi submetido ao Journal of the American Geriatrics Society.

c) Considerações finais: a síntese dos resultados.

SUMÁRIO

INTRODUÇÃO

Qualidade de vida foi definida pelo grupo de qualidade de vida da Organização Mundial da Saúde como "a percepção do indivíduo de sua posição na vida no contexto da cultura e sistema de valores nos quais ele vive e em relação aos seus objetivos, expectativas, padrões e preocupações" (THE WHOQOL GROUP, 1995, p.1405).

A condição bucal é uma parte integrante da saúde como um todo e é um fator importante para a qualidade de vida geral (HUGO et al., 2009). A qualidade de vida relacionada à saúde bucal pode ser definida como "a ausência de impactos negativos da condição bucal na vida social e um sentido positivo de autoconfiança da condição bucal" (ATCHISON, 2002, p.15). Os problemas bucais são importantes para a qualidade de vida relacionada à saúde bucal, porque os resultados dessa relação são vivenciados no cotidiano, trazendo impacto funcional, social e psicológico (LOCKER, 1997).

De acordo com Najman e Levine (1981), o interesse médico e odontológico na qualidade de vida relacionada à saúde surgiu devido a três fatores: o papel ativo do paciente na escolha do seu tratamento, a necessidade de abordagens práticas baseadas em evidências e o fato de que muitos tratamentos não curam doenças crônicas. Desse modo, transformam a qualidade de vida relacionada à saúde em uma importante variável de desfecho. Cabe ressaltar que, neste momento em que a odontologia baseada em evidências vem crescendo em importância, é fundamental que, tanto na clínica quanto na pesquisa, seja substancialmente ampliada a utilização dos instrumentos de avaliação de qualidade de vida relacionada à saúde bucal, a fim de que desfechos realmente importantes para a vida dos indivíduos passem a ser considerados.

Geralmente, os indicadores de qualidade de vida associada à saúde são construídos sob a forma de questionários compostos de itens (perguntas) que procuram medir, por meio de respostas organizadas sob a forma de escalas numéricas, quanto os aspectos da vida das

pessoas são afetados pelas condições de saúde (WALLANDER; SCHMITT; KOOT, 2001). Os itens dos indicadores são agrupados por afinidade e mensuram indiretamente um mesmo construto, domínio ou dimensão (TESTA; SIMONSON, 1996). Os domínios, em geral, são o físico, o psicológico e o social (FITZPATRICK, 1992). Um aspecto importante desse tipo de ferramenta é a sua capacidade de representar, sob a forma numérica, as diferenças entre pessoas e comunidades, no que diz respeito à qualidade de vida associada à saúde (SEVENHUYSEN; TRUMBLE-WADDELL, 1997).

O World Health Organization Quality of Life (cuja versão abreviada é WHOQOL-Bref) é um instrumento para avaliação da qualidade de vida que foi desenvolvido pelo WHOQOL Group a partir do WHOQOL-100. Esses instrumentos foram desenvolvidos a partir da constatação de que não havia nenhum instrumento que avaliasse qualidade de vida mediante uma perspectiva transcultural. Os domínios avaliados pelo questionário compreendem: domínio físico, domínio psicológico, relações sociais e meio ambiente (FLECK et al., 1999, 2000). Dentre os diferentes instrumentos que a literatura cita para avaliar qualidade de vida relacionada à saúde bucal, o Oral Health Impact Profile (OHIP – Perfil do Impacto da Saúde Bucal) é um dos mais utilizados. O OHIP apresenta domínios físico, psicológico e social (SLADE; SPENCER, 1994). Nos dois instrumentos existem algumas dimensões que pretendem mensurar os mesmos aspectos da qualidade de vida. De acordo com a literatura, não existem estudos comparando as dimensões do WHOQOL-Bref e do OHIP.

A maioria dos modelos teóricos de qualidade de vida relacionada à saúde bucal foi construída com base na epidemiologia e nas teorias psicológicas e sociais, e incorporam fatores biológicos, sociais, psicológicos e culturais (PATRICK; ERIKSON, 1993; BARBOSA; GAVIÃO, 2008). Teoricamente, qualidade de vida relacionada à saúde bucal é uma função de vários sintomas e experiências, ou seja, representa as percepções positivas e

negativas do indivíduo e avalia, ainda, a percepção geral da qualidade de vida (SEIDL; ZANNON, 2004). Todos os itens e os domínios dos indicadores de qualidade de vida relacionada à saúde bucal são fundamentados em modelos teóricos, mas o número de itens e a natureza das dimensões variam entre os diferentes instrumentos. No entanto, o que exatamente está sendo medido pelos construtos de qualidade de vida relacionada à saúde bucal é um tanto obscuro. Muitas vezes, os autores descrevem extensivamente preocupações sobre a fundamentação dada ao construto, métodos de escores e propriedades técnicas em vez de relatarem a questão mais fundamental: o que o instrumento realmente mede e o modelo teórico em que foi baseado (LOCKER; ALLEN, 2007).

O histórico de pesquisas da escala OHIP revela poucos estudos de avaliações da sua estrutura dimensional. A escala original é formada por sete domínios, contudo John e colaboradores (2004) realizaram um estudo com análise fatorial exploratória e encontraram que o OHIP-49 tem quatro dimensões, em vez das sete originais. Outro estudo realizou análise fatorial confirmatória e encontrou três dimensões (MONTERO et al., 2010). Vale ressaltar a importância da questão dimensional, pois essa estrutura indica a forma como o instrumento deve ser concretamente operacionalizado. Análises mais aprofundadas sobre a dimensionalidade e a adequação dos itens do OHIP permitem melhorar o uso e a interpretação do instrumento.

O uso de medidas de qualidade de vida relacionada à saúde bucal oferece vantagens importantes para avaliar o impacto das condições bucais no bem-estar (SLADE, 1994), os resultados de tratamentos clínicos (LOCKER, 2004), o planejamento e a provisão dos serviços odontológicos (SHEIHAM, 2000). De acordo com a literatura, poucos estudos investigaram relações específicas entre variáveis clínicas e não clínicas a medidas de qualidade de vida relacionada à saúde bucal, como o OHIP, com um modelo teórico. Wilson e Cleary (1995) propuseram um modelo de cinco dimensões para avaliação de saúde e

estabeleceram relações específicas entre elas, associando variáveis clínicas a medidas de qualidade de vida. Dessa maneira, fatores biológicos e fisiológicos determinariam os sintomas, que influenciariam o funcionamento do indivíduo, que por sua vez determinaria a avaliação de sua saúde (no seu conceito mais amplo, não como mera ausência de doença) e, consequentemente, de qualidade de vida (WILSON; CLEARY, 1995).

Considerando-se a escassez de literatura disponível sobre estudos comparando as dimensões do WHOQOL-Bref e do OHIP-14, sobre os domínios da escala OHIP, bem como poucos estudos com um modelo teórico, faz-se importante a realização de estudos que avaliem a questão da dimensionalidade e, ainda, proporcionem o conhecimento das relações entre as variáveis clínicas e não clínicas e o OHIP.

REVISÃO DA LITERATURA

Qualidade de vida

O interesse no conceito de qualidade de vida é compartilhado pelas ciências sociais, humanas, biológicas e políticas, no sentido de valorizar parâmetros mais amplos do que o controle de sintomas, a diminuição da mortalidade ou o aumento da expectativa de vida. Considera-se que o termo qualidade de vida é mais geral e envolve uma variedade de condições que podem afetar a percepção do individuo, seus sentimentos e o comportamento com o seu funcionamento diário, incluindo, mas não se limitando à sua condição de saúde (FLECK et al., 1999).

Segundo o grupo de qualidade de vida da Organização Mundial da Saúde (THE WHOQOL GROUP, 1995, p.1405) "qualidade de vida é a percepção do indivíduo acerca de sua posição na vida, de acordo com o contexto cultural e o sistema de valores com os quais convive e em relação a seus objetivos, expectativas, padrões e preocupações". Para a Organização Mundial de Saúde, o conceito de qualidade de vida envolve três qualidades essenciais: um conceito subjetivo, multidimensional e inclusivo de aspectos positivos e negativos.

Determinantes de qualidade de vida

Vários são os fatores que influenciam a qualidade de vida: expectativas de saúde, suporte social, autoestima, habilidade em enfrentar limitações e incapacidades (NELSON; BERWICK, 1989). Outro autor agrupou os determinantes da qualidade de vida da seguinte forma: orgânicos: saúde e estado funcional; psicológicos: identidade, autoestima, aprendizado; sociais: relacionamento, privacidade, sexualidade; comportamentais: hábitos, vida profissional, lazer; materiais: economia privada, renda, habitação; estruturais: posição social, significado da própria vida (HÖRNQUIST, 1990).

Um estudo canadense buscou determinar os fatores preditores de qualidade de vida em uma amostra de idosos residentes na comunidade. Os fatores que influenciaram diretamente a qualidade de vida dos idosos foram circunstâncias financeiras, estado de saúde e sentido na vida (LOW; MOLZAHN, 2007). Segundo Xavier e colaboradores (2003), saúde, renda, envolvimento em atividades religiosas, vida social e relacionamento com a família são fatores associados com avaliações positivas de qualidade de vida.

Um outro estudo com idosos identificou que o sexo feminino, renda inadequada e morar longe da família foram associados com pior qualidade de vida no componente psicológico. Relacionadas ao componente físico, também estiveram associadas a idade avançada, renda inadequada, não ser casado e uso de medicamentos (DE BELVIS et al., 2008).

Instrumentos de avaliação de qualidade de vida

O World Health Organization Quality of Life, versão abreviada (WHOQOL-Bref), é um instrumento para avaliação da qualidade de vida que foi desenvolvido pelo WHOQOL Group a partir do WHOQOL-100. Estes instrumentos foram desenvolvidos pela constatação de que não havia nenhum instrumento que avaliasse qualidade de vida a partir de uma perspectiva transcultural, e apresentam características psicométricas satisfatórias, inclusive entre populações brasileiras (FLECK et al., 1999, 2000). O WHOQOL-Bref, especificamente, consta de 26 questões, sendo duas gerais de qualidade de vida e as demais 24 representam cada uma das 24 facetas que compõem o instrumento original (FLECK et al., 2000). Os domínios avaliados pelo teste compreendem: domínio físico, domínio psicológico, relações sociais e meio ambiente. Qualidade de vida pode ser considerada como um conjunto de parâmetros individuais, socioculturais e ambientais que caracterizam as condições em que vive o ser humano (PASCHOAL, 2004). A qualidade de vida, propriamente dita, engloba a

qualidade de vida relacionada à saúde, acrescida de determinantes do ambiente interno (individual) e ambiente externo (social e cultural) (PATRICK, 2008).

O questionário Medical Outcomes Study 36- Item Short- Form Health Survey (SF-36) é um instrumento genérico, utilizado para avaliar de forma ampla e completa o termo qualidade de vida. Trata-se de um instrumento multidimensional, formado por 36 itens, um relacionado à mudança na saúde e 35 englobados em oito componentes (itens): capacidade funcional (dez), aspectos físicos (quatro), dor (dois), estado geral de saúde (cinco), vitalidade (quatro), aspectos sociais (dois), aspectos emocionais (três) e saúde mental (cinco). Cada item apresenta de duas a seis possibilidades de respostas, e um escore final de 0 a 100, no qual o 0 corresponde à pior e 100 à melhor qualidade de vida (CICONELLI et al., 1999).

Qualidade de vida relacionada à saúde

O termo qualidade de vida relacionada à saúde é muito frequente na literatura e tem sido usado com objetivos semelhantes à conceituação mais geral. No entanto parece implicar os aspectos mais diretamente associados às enfermidades ou às intervenções em saúde (SEIDL; ZANNON, 2004).

O termo qualidade de vida relacionada à saúde refere-se aos domínios físico, psicológico e social da saúde, considerados como áreas distintas, influenciadas por experiências, crenças e percepções de uma pessoa. Avaliações de qualidade de vida relacionada à saúde mensuram alterações na saúde física, funcional, mental e social, com o objetivo de avaliar custos financeiros e humanos, além das vantagens de novos programas e intervenções (TESTA; SIMONSON, 1996). Os instrumentos de mensuração da qualidade de vida relacionada à saúde tendem a manter o caráter multidimensional e avaliam ainda a percepção geral da qualidade de vida, embora a ênfase habitualmente recaia sobre sintomas, incapacidades ou limitações ocasionados por enfermidade (SEIDL; ZANNON, 2004).

Qualidade de vida relacionada à saúde bucal

A saúde bucal é um fator determinante de qualidade de vida. O complexo craniofacial permite-nos falar, sorrir, tocar, beijar, cheirar, sentir gosto, mastigar, engolir e expressar sentimentos. O impacto psicossocial das doenças bucais frequentemente diminui de modo significativo a qualidade de vida (PETERSEN, 2003).

O conceito de qualidade de vida relacionada à saúde bucal é centrado na avaliação pessoal, na capacidade de o indivíduo viver plenamente em relação ao seu espaço social (PORTILLO; PAES, 2000) e é influenciado pelas experiências pessoais (CARVALHO; MARTINS, 1998). Conforme referido anteriormente, a qualidade de vida relacionada à saúde bucal pode ser definida como "a ausência de impactos negativos da condição bucal na vida social e um sentido positivo de autoconfiança da condição bucal" (ATCHISON, 2002, p.15).

Determinantes de qualidade de vida relacionada à saúde bucal

As pessoas percebem a importância da saúde bucal para a qualidade de vida sob uma variedade de formas nos domínios físico, social e psicológico, sendo que a capacidade de se alimentar e a ocorrência de dor e desconforto costumam ser consideradas os aspectos positivo e negativo mais relevantes para a qualidade de vida, respectivamente (McGRATH; BEDI, 2004). De acordo com a literatura, a perda dental, o edentulismo, a distribuição dos dentes nas arcadas dentais, os problemas mastigatórios, as próteses mal-adaptadas e o constrangimento devido ao formato dos dentes impactam negativamente na qualidade de vida relacionada à saúde bucal (PETERSEN, 2003; SILVA et al., 2007; GAGLIARDI; SLADE; SANDERS, 2008). Outros determinantes associados com qualidade de vida relacionada à saúde bucal são apresentados no quadro I.

Quadro1. Determinantes associados com qualidade de vida relacionada à saúde bucal (QVRSB).

Autor	Objetivos	Metodologia	Resultados
John et al. (2004)	Investigar a associação entre variáveis sociodemográficas, condição bucal e QVRSB.	Estudo transversal com 2.026 indivíduos com idade entre 16 a 79 anos. A amostragem foi em múltiplos estágios. Foi utilizado questionário com questões sociodemográficas, OHIP-14 e exame clínico.	O número de dentes perdidos teve associação significativa com pior QVRSB. As pessoas que vivem na zona urbana perceberam melhor a sua QVRSB.
Steele et al. (2004)	Avaliar como a idade e a perda dos dentes podem afetar a QVRSB.	Estudo transversal com amostragem aleatória estratificada em populações adultas e idosas da Inglaterra (n=3.662) e da Austrália (n=3.406). Foi utilizado questionário com questões sociodemográficas, OHIP-14 e exame clínico.	Nas duas populações, houve redução do impacto dos problemas de saúde bucal na QVRSB com o aumento da idade. A perda dos dentes teve associação com piores valores do OHIP-14.
Makhija et al. (2006)	Investigar a associação entre variáveis sociodemográficas e QVRSB.	Estudo transversal com amostra aleatória simples de 288 idosos americanos. Foi utilizado questionário com questões sociodemográficas e OHIP-14.	Idosos com baixa renda e escolaridade foram mais propensos a ter pior QVRSB.
Mariño et al. (2008)	Avaliar o impacto da condição bucal e das variáveis sociodemográficas na QVRSB.	Estudo transversal com amostra de conveniência de 603 idosos imigrantes na Austrália. Foi utilizado questionário com questões sociodemográficas, OHIP-14 e exame clínico.	Idosos que perderam mais dentes apresentaram maiores valores no OHIP-14. Homens relataram menos impacto na QVRSB.
Inukai et al. (2010)	Investigar a associação entre capacidade de mastigação e QVRSB.	Estudo transversal com amostragem consecutiva de 489 pacientes dentados com idade entre 19 a 90 anos. Foi utilizado questionário com questões sociodemográficas, OHIP-14, questionário de capacidade mastigatória e exame clínico.	Maior capacidade mastigatória foi correlacionada com menores escores de OHIP, indicando melhor QVRSB.
Dos Santos et al. (2012)	Avaliar as mudanças de QVRSB e avaliar os fatores destas mudanças.	Estudo longitudinal com amostra aleatória de 587 idosos brasileiros. Foi utilizado questionário com questões sociodemográficas, OHIP-14 e exame clínico.	Foram identificados como importantes fatores associados à piora na QVRSB: a zona rural, frequência de escovação menor que uma vez ao dia e ter entre 1 a 19 dentes. Fatores associados à melhora na QVRSB foram o sexo feminino e a renda mensal
Stenman et al. (2012)	Avaliar a associação entre QVRSB e condição bucal e percepção de saúde bucal.	Estudo transversal com amostra aleatória de 561 idosos. Foi utilizado questionário com questões sociodemográficas, satisfação com a aparência dos dentes e OHIP-14.	A aparência dos dentes teve associação com altos escores de OHIP-14, indicando forte influência sobre QVRSB.

Instrumentos de avaliação de qualidade de vida relacionada à saúde bucal

Nas últimas duas décadas, o impacto e a percepção da condição de saúde bucal e da qualidade de vida do indivíduo passaram a ser motivos de preocupação. O uso de avaliações de resultados baseadas no paciente, a fim de ter um ganho substancial de informações a respeito do impacto dos problemas bucais na qualidade de vida relacionada à saúde, tem sido defendido por diversos autores (SLADE, 1997). Alguns pesquisadores começaram a trabalhar com medidas que visam a inserir a percepção do próprio paciente sobre sua condição bucal. Esses dados proporcionam ao profissional os subsídios auxiliares, permitindo uma visão integral do indivíduo (ALMEIDA; LOUREIRO; ARAÚJO, 2007).

A avaliação do estado de saúde, tanto de indivíduos quanto de comunidades, deve incorporar o emprego de indicadores de saúde baseados na percepção individual (BOWLING, 1999). Os instrumentos de qualidade de vida relacionada à saúde bucal são medidas do grau em que doenças dentárias e bucais afetam o funcionamento do papel social normal e trazem mudanças no comportamento, tais como incapacidade para o trabalho, frequência na escola ou realização de outra tarefa diária (LOCKER, 1988). A literatura oferece diferentes instrumentos válidos para avaliar aspectos da condição bucal e da qualidade de vida (ATCHISON; DOLAN, 1990; LEÃO; SHEIHAM, 1995; SLADE; SPENCER, 1994). Várias escalas foram desenvolvidas, como: Geriatric Oral Health Assessment Index (GOHAI), Dental Impacts on Daily Living (DIDL), Oral Impacts on Daily Performance*s* (OIDP), The Oral Health Impact Profile (OHIP) e a sua versão abreviada, o OHIP-14.

O Índice Geriátrico de Avaliação de Saúde Bucal (GOHAI) foi desenvolvido nos Estados Unidos e originalmente desenhado para aplicação em idosos (ATCHISON; DOLAN, 1990), sendo traduzido para o português e validado em população de idosos no Brasil. As 12 questões do índice GOHAI envolvem a análise de informações proporcionadas pelos próprios indivíduos quanto à influência de seus problemas de saúde bucal nas dimensões: a)

física/funcional, incluindo alimentação, fala e deglutição; b) psicossocial/psicológica, compreendendo preocupação ou cuidado com a própria saúde bucal, insatisfação com a aparência, autoconsciência relativa à saúde bucal e o fato de evitar contatos sociais devido a problemas odontológicos; e c) dor/desconforto, considerando o uso de medicamentos para aliviar essas sensações. Para as respostas dessas questões existem escores que, somados, darão o valor do índice: quanto maior, melhor a percepção da condição bucal. O índice tem valor máximo de 36 e mínimo de 12 (SILVA; FERNANDES, 2001).

O índice Impactos Dentais na Vida Diária (DIDL) avalia problemas psicossociais com reflexos na qualidade de vida, segundo sua condição bucal, utilizando cinco dimensões: conforto, aparência, dor, performance (habilidade de realizar normalmente atividades diárias e interagir socialmente) e restrições alimentares (em morder e mastigar). É um questionário de 36 itens que objetiva obter escores para cada dimensão e também um escore geral, que avalia o impacto de todas as dimensões envolvidas. O escore por dimensões é feito somando-se os valores de cada item (questão) que compõe uma dimensão. O escore total é obtido com a soma total das cinco dimensões (LEÃO; SHEIHAM, 1995).

O índice Impactos Bucais na Atividade Diária (OIDP) é um instrumento formado por oito questões que avalia o impacto das condições bucais na habilidade do indivíduo em desenvolver oito funções diárias: comer e aproveitar a comida; falar claramente; realizar a higiene bucal; dormir e relaxar; sorrir, gargalhar e mostrar os dentes sem embaraço; manter o estado emocional estável; desenvolver adequadamente trabalhos no emprego ou em nível social; e aproveitar o contato com as pessoas. A frequência com que o indivíduo é afetado ou com que apresenta impacto negativo nessas funções é avaliada por uma escala temporal chamada escala de frequência, estratificada da seguinte maneira: nunca nos últimos seis meses, menos que uma vez por mês, uma ou duas vezes por mês, uma ou duas vezes por semana, três a quatro vezes por semana, todos os dias ou quase todos. Essa escala tem um

escore que vai de zero (nunca nos últimos seis meses) a cinco (todos os dias ou quase todos). Também é avaliada a severidade percebida, que é uma pontuação na qual o entrevistado gradua quanta dificuldade aquela função lhe traz na vida diária, desde cinco (muito severa) a zero (nenhuma). A pontuação final de cada função é obtida multiplicando-se o valor da escala de frequência com o da escala de severidade percebida. Já a pontuação total do índice é obtida pela soma de todos os escores da escala de frequência e de severidade percebida (ADULYANON; SHEIHAM, 1996).

Uma escala que vem sendo amplamente utilizada é o Perfil do Impacto sobre Saúde Bucal (OHIP). Essa escala foi desenvolvida na Austrália por Slade e Spencer (1994). O modelo conceitual em que os autores se basearam para identificar os domínios conceituais foi o modelo teórico de saúde bucal de Locker (1988). Nesse modelo, a doença pode levar à deficiência. Essa deficiência pode levar à limitação funcional ou pode trazer dor ou desconforto, tanto físico quanto psicológico. Tanto um quanto outro podem ocasionar a incapacidade psicológica ou social, descritas pelo autor como qualquer limitação ou falta de habilidade para realizar atividades da vida diária.

A escala OHIP possui originalmente 49 itens que abordam sete domínios: limitação funcional, dor física, desconforto psicológico, incapacidade física, incapacidade psicológica, incapacidade social e desvantagem social. O OHIP tem como característica a sua estruturação a partir da abordagem de formas negativas dos aspectos de saúde. Em 1997, uma forma reduzida desse instrumento foi validada, com 14 itens, mantendo duas perguntas referentes a cada um dos sete domínios (SLADE, 1997). Também no formato reduzido, esse instrumento foi considerado válido para aplicação em pesquisas relacionadas à qualidade de vida e à saúde bucal da população (WONG; LO; MCMILLAN, 2002). Oliveira e Nadanovsky (2005) concluíram que a versão brasileira do OHIP-14 tem propriedades psicométricas que são

similares ao instrumento original, configurando a sua validação para o idioma português brasileiro.

A dimensão limitação funcional inclui perguntas sobre dificuldade para falar e piora no sabor dos alimentos; na dimensão dor física, pergunta-se sobre a sensação de dor e incômodo para comer; em desconforto psicológico, as perguntas referem-se à preocupação e ao estresse pela condição bucal. O prejuízo na alimentação e a necessidade de ter de parar de se alimentar são os quesitos da dimensão incapacidade física, enquanto que na incapacidade psicológica as perguntas referem-se à dificuldade para relaxar e ao sentimento de vergonha em função da condição bucal. A dimensão incapacidade social inclui perguntas sobre irritação com terceiros e dificuldade de realizar atividades da rotina diária por causa da condição bucal; e as perguntas que compõem a dimensão desvantagem social buscam saber se há a percepção de que a vida tenha piorado e se a pessoa se sentiu totalmente incapaz de desenvolver suas atividades rotineiras (SLADE, 1997). De acordo com a literatura, poucos estudos avaliaram a estrutura dimensional do OHIP, apresentando resultados contraditórios. Dois estudos utilizaram análise fatorial exploratória (AFE) (JOHN et al., 2004; BRENNAN; SPENCER, 2004) e apenas um utilizou análise fatorial confirmatória (AFC) (MONTERO et al., 2010). Os estudos que realizaram a AFE encontraram de dois a quatro fatores para o OHIP (JOHN et al., 2004; BRENNAN; SPENCER, 2004). Mais recentemente, uma AFC encontrou três dimensões para o OHIP-14 (MONTERO et al., 2010).

De modo geral, os estudos que usaram a escala OHIP suportam que perda dental, edentulismo, distribuição dos dentes nas arcadas dentais, problemas mastigatórios e próteses mal adaptadas impactam na qualidade de vida relacionada à saúde bucal (BIAZEVIC et al., 2004; SILVA et al., 2007; GAGLIARDI; SLADE; SANDERS, 2008; MARIÑO et al., 2008). O estudo de Locker e Jokovic (1996) teve como objetivo identificar necessidades de tratamento odontológico usando a escala OHIP e todos os participantes da sua pesquisa se

submeteram a exame clínico e responderam ao questionário. Dois terços dos participantes acusaram necessidades de tratamento odontológico no exame clínico. Quando essa avaliação foi comparada com o resultado do OHIP, a escala identificou apenas 56% indivíduos que tiveram avaliação clínica de necessidade de tratamento.

Psicometria

A psicometria é um ramo da Psicologia que faz interface com a estatística, com o objetivo de avaliar adequadamente as diferenças individuais sob o enfoque positivista, no qual a quantificação e a generalização dos fenômenos são fundamentais. Seus parâmetros de qualidade são padronização, validade e fidedignidade (PASQUALI, 1999).

O termo fidedignidade sugere confiabilidade. Quando decisões de qualquer tipo devem ser tomadas, no todo ou em parte, com base em escores de testes, seus usuários precisam ter certeza de que tais escores são razoavelmente confiáveis. Para terem um certo grau de confiança nos escores, os usuários de testes exigem evidências de que os escores obtidos seriam consistentes se os testes fossem repetidos com os mesmos indivíduos ou grupos. A fidedignidade na mensuração implica consistência e precisão. Embora a prática de descrever os testes como fidedignos seja comum, o fato é que a qualidade da fidedignidade, caso exista, pertence não aos testes, mas aos escores deles obtidos (URBINA, 2007).

A consistência dos resultados no procedimento de teste-reteste mostra o quanto os resultados de uma pessoa podem ser generalizados para ocasiões diferentes. Quanto maior a estabilidade, menos suscetíveis serão os escores às mudanças aleatórias nas condições dos testandos ou do ambiente de testagem; em consequência, maior será sua confiabilidade. Cada teste deve conter uma informação sobre o tipo de fidedignidade que foi utilizado, o intervalo das aplicações e a descrição das características dessa amostra. A medida de fidedignidade caracteriza o teste quando ele é aplicado em condições-padrão e com pessoas semelhantes àquelas que constituem a amostra normativa (URBINA, 2007).

A validade tem sido entendida como a possibilidade de o instrumento avaliar aquilo que se propõe a avaliar. Em geral, a essência dos julgamentos a respeito da validade dos escores de teste está centrada no relacionamento entre aquilo que os escores representam e as perguntas que os usuários de testes querem responder com seu uso. As perguntas feitas determinam o tipo de evidência de que se precisa, bem como as relações lógicas –indutivas e dedutivas – que devem ser estabelecidas para contemplar as questões do que se está medindo com os testes e que inferências se podem fazer a partir de seus escores (URBINA, 2007).

Psicometria do Oral Health Impact Profile-14

A escala OHIP-14 foi desenvolvida utilizando dados epidemiológicos de uma amostra de 1.217 australianos com idade média de 60 anos. A confiabilidade interna do OHIP-14 foi alta, de acordo com o coeficiente alfa de Cronbach, que foi de 0,88 (SLADE, 1997). Para a adaptação do OHIP-14 ao contexto cultural do Brasil e ao idioma português, foi realizada uma tradução transcultural. Os resultados do estudo de validação demonstraram uma consistência interna excelente: valor de alfa de Cronbach igual a 0,91. A reprodutibilidade do instrumento também alcançou um escore considerado muito bom, com um coeficiente de correlação intraclasse igual a 0,87. Os autores relatam que o OHIP-14 provou ser capaz de diferenciar grupos de indivíduos com melhor ou pior saúde bucal. Dados quanto à percepção sobre condição de saúde e à necessidade de tratamento percebida também estiveram associados com os escores do OHIP, confirmando a validade da escala. Além disso, o OHIP também apresentou uma correlação significativa com outro instrumento desenvolvido para avaliar o impacto de problemas bucais na qualidade de vida relacionada à saúde, aplicado nesse estudo (OIDP). As correlações das pontuações do OIDP (rs = -0,21; rs = -0,41) e do OHIP-14 (rs = -0,16; rs = -0,62) com saúde geral e bucal percebidas ocorreram no sentido esperado. As correlações do OHIP-14 e do OIDP com a saúde bucal percebida foram mais fortes do que com a saúde geral percebida. O coeficiente de correlação entre o OIDP e o OHIP-14 foi igual

a 0,76. Todas as hipóteses formuladas para verificar a validade da versão brasileira do OHIP foram confirmadas (OLIVEIRA; NADANOVSKY, 2005).

Análise Fatorial Exploratória e Análise Fatorial Confirmatória

Uma maneira de analisar os itens e as dimensões dos construtos é através da análise fatorial. Existem dois tipos de análise fatorial, que devem ser adequados aos objetivos de cada estudo em que forem aplicadas (HAIR et al., 2005). São elas: 1) Análise Fatorial Exploratória – realizada quando pouco se sabe sobre as relações subjacentes entre os conjuntos de dados; e 2) Análise Fatorial Confirmatória – procedimento desenvolvido para testar hipóteses a respeito da estrutura de um conjunto de dados; esse tipo de análise é útil para a construção de teorias. A Análise Fatorial Exploratória serve para definir possíveis relações entre um conjunto de itens definindo dimensões, por sua vez, a Análise Fatorial Confirmatória testa uma relação pré-especificada, ou seja, cada dimensão deve consistir em itens com cargas altas (valor >0.30) no respectivo fator. Essa análise é importante para avaliar a necessidade de permanência de cada item ou se é necessária a sua retirada da composição da escala ou, ainda, se é preciso rever a própria dimensão para a consolidação do espaço de conteúdo do construto (STEWART, 1981). A combinação de primeiro efetuar a Análise Fatorial Exploratória e depois a Análise Fatorial Confirmatória é uma opção quando se tem uma teoria subjacente, mas não se conhece, a partir das variáveis medidas, o número de domínios, ou mesmo se há necessidade de verificar sua composição (HATCHER, 1994).

Modelos teóricos

Os instrumentos de mensuração da qualidade de vida relacionada à saúde tendem a manter o caráter multidimensional e avaliam ainda a percepção geral da qualidade de vida, embora a ênfase habitualmente recaia sobre sintomas, incapacidades ou limitações ocasionados por enfermidades (SEIDL; ZANNON, 2004).

O modelo teórico de avaliação da saúde bucal de Locker (1988) foi elaborado com base na Classificação Internacional de Danos, Limitações e Incapacidades da Organização Mundial da Saúde. O modelo conecta de forma linear os conceitos de doença, deficiência, limitação funcional, incapacidade e desvantagem social, permitindo que a análise do impacto dos problemas bucais sobre a vida das pessoas seja realizada de forma progressiva, do nível biológico para o comportamental e deste para o social. Tal abrangência de abordagem é importante e adequada, considerando-se que é perfeitamente possível uma doença produzir impacto em uma ou mais dimensões da vida das pessoas, ou eventualmente em todas elas.

Wilson e Cleary (1995) propuseram um modelo de cinco dimensões para avaliação de saúde e estabeleceram relações específicas entre elas, associando variáveis clínicas a medidas de qualidade de vida. Dessa maneira, fatores biológicos e fisiológicos determinariam os sintomas, os quais influenciariam o funcionamento do indivíduo, que por sua vez determinaria a avaliação de sua saúde (no seu conceito mais amplo, não como mera ausência de doença) e, consequentemente, de qualidade de vida. Em todos esses níveis também estariam envolvidas características individuais (personalidade, valores) e ambientais (suporte psicossocial e econômico). Segundo os autores, esse modelo facilitaria a compreensão das associações entre parâmetros clínicos e qualidade de vida e seria útil na formulação de estratégias para melhorá-la, bem como melhorar o estado funcional, requerendo não só a identificação dos fatores-chave que os determinariam, mas também sua importância relativa e o grau em que poderiam ser modificados.

Modelagem de equações estruturais

A modelagem de equações estruturais não apenas permite o teste confirmatório da estrutura psicométrica de escalas de medida, mas também pode ser utilizada para analisar relações explicativas entre múltiplas variáveis simultaneamente, sejam essas latentes ou observadas (URBINA, 2007).

Em MEE, uma das questões primordiais diz respeito à especificação do modelo, isto é, o estabelecimento de relações entre as variáveis, a definição dos tipos de variáveis no modelo e a caracterização do tipo de modelo existente. Segundo Hox e Bechger (1998), o processo de especificação de um modelo é guiado pela combinação de elementos teóricos e de evidências empíricas de pesquisas anteriores. Uma característica comum em MEE, como forma de especificação, é a representação gráfica dos modelos estruturais. Essa representação possui uma simbologia de nomenclatura convencionada pelos pesquisadores do campo. As relações estruturais entre variáveis são representadas por diagramas. Nestes, as variáveis representadas por retângulos ou quadrados indicam variáveis observadas, e variáveis representadas por círculos ou elipses indicam variáveis latentes. As variáveis latentes, por sua vez, estão associadas às variáveis observadas, pois os construtos latentes são aferidos, via de regra, por fenômenos observáveis do campo de investigação (por exemplo, os itens de um instrumento psicométrico de medida são os indicadores observáveis de construtos latentes que tais itens têm como função mensurar).

Hair et al. (2005) definem variáveis latentes como a operacionalização de construtos em MEE. Construtos são variáveis não diretamente observadas, mensuradas de forma indireta por meio de variáveis observadas. Por sua vez, variáveis observadas ou manifestas são definidas por esses autores como os indicadores de uma variável latente ou construto. No caso da psicologia, é muito comum que esses indicadores observados sejam itens de instrumentos psicométricos (PASQUALI, 2003). Os métodos de MEE devem ter início em um modelo conceitual que especifique as relações entre um conjunto de variáveis. A MEE oferece estimativas da força de todas as relações hipotetizadas. Estimativas de efeitos diretos, indiretos e totais em análises envolvendo modelos teóricos podem ser obtidas por meio dessa técnica. As informações disponibilizadas referem-se tanto ao impacto de uma variável sobre a

outra como da relação de uma influência indireta, de uma variável posicionada entre duas outras, denominada interveniente ou mediadora (KLINE,1998).

OBJETIVOS

Os objetivos do presente estudo foram avaliar a dimensionalidade e testar um modelo conceitual de qualidade de vida relacionada à saúde bucal utilizando a escala Oral Health Impact Profile-14.

Os objetivos específicos do presente estudo foram:

- Investigar se existe convergência entre as dimensões do World Health Organization Quality of Life Questionnaire-Brief Version e do Oral Health Impact Profile-14.

- Investigar a estrutura dimensional do Oral Health Impact Profile-14.

- Testar o modelo conceitual de Wilson e Cleary em relação à qualidade de vida relacionada à saúde bucal utilizando o Oral Health Impact Profile-14.

MANUSCRITO I

COMPARISON OF TWO ASSESSMENT INSTRUMENTS OF THE QUALITY OF LIFE IN OLDER ADULTS

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Abstract

Objective: The objective was to investigate if there is convergent validity between the dimensions of World Health Organization Quality of Life Questionnaire-Brief Version (WHOQOL-Bref) and Oral Health Impact Profile-14 (OHIP-14) questionnaires.

Methods: In this cross-sectional study, a random sample of 872 elderly Southern-Brazilians was evaluated. Questionnaires assessing socio-demographic data and quality of life in general (WHOQOL-Bref) and oral health-related quality of life (OHIP-14) were used. Analysis of the WHOQOL-Bref and OHIP-14 questionnaires used the descriptive statistics. The dimensions of WHOQOL-Bref and OHIP-14 questionnaires were correlated by affinity. The convergence between WHOQOL-Bref and OHIP-14 dimensions was analyzed by Spearman's correlation coefficients.

Results: The social relations dimension of the WHOQOL-Bref presented the greatest mean (18.24 ± 2.30). The physical pain dimension of the OHIP-14 presented a median of 1.0 (0.0 - 3.0). All correlations between WHOQOL-Bref and OHIP-14 dimensions were significant, negative and low magnitude associated. The correlation between WHOQOL-physical and OHIP-functional limitation, OHIP-physical pain, OHIP-physical disability and OHIP-handicap were -0,164, -0,262, -0,196 and -0,125 respectively. WHOQOL-psychological was associated with OHIP-psychological discomfort and OHIP-psychological disability, and WHOQOL-social showed an association with OHIP-social disability.

Conclusions: All correlations analyzed had a positive association of low magnitude. Despite the fact that WHOQOL-Bref and OHIP-14 instruments have related dimensions, they measure physical, psychological and social relations differently.

Key words: Quality of life, Aged, Questionnaires, Oral health, OHIP, WHOQOL-Bref.

Introduction

The world life expectancy increase has demanded actions in order to assess and improve health and the quality of life of elderly people[1]. The term quality of life, when related to health, involves aspects more directly associated to diseases or health interventions[2]. The concept of quality of life is wider and more subjective than the definition above, considering that good mental and physical health influences good quality of life of older persons[3]. According to The World Health Organization Quality of Life Group (WHOQOL)[4] "Quality of life is the perception of an individual about his position in life, according to the cultural context and system of values in which he lives as well as in relation to his objectives, expectations, patterns and concerns".

Oral health is part of health as a whole and it is an important factor for quality of life[5]. Oral health-related quality of life has been defined as "the absence of negative impacts of oral conditions on social life and a positive sense of dentofacial self-confidence"[6]. Oral problems are also important for oral health- related quality of life because such problems are experienced in daily life, bringing functional, social and psychological impacts[7]. According to Brondani et al. (2008)[8], little is known on the complexity of personal factors that affect the perception of oral health. The negative impact of oral conditions for older person's quality of life is a public health problem, which has to be contemplated by public health policies[9].

There are some instruments that assess the individual's perception on subjective aspects of his/hers own health and these indicators may be used to better assess his/hers health conditions[10]. The literature has provided different instruments for measuring quality of life[11], including the World Health Organization Quality of Life Questionnaire-Brief Version (WHOQOL-Bref)[12-14] and the Oral Health Impact Profile-14 (OHIP-14)[15-16], both considered valid constructs. The WHOQOL-Bref is a questionnaire that assesses how the individual feels about his quality of life, health and other areas of his life in the last two weeks. The OHIP-14

provides a broad measurement of dysfunction, discomfort and disability attributed to oral condition in the last months.

The WHOQOL-Bref assesses the quality of life in general and the OHIP-14 assesses the impact of oral conditions on quality of life, and there is little research that correlates these two instruments in older people. Both constructs encompass, in general, the perception of health and its impact on social, psychological and physical dimensions[17]. However, the different dimensions of the WHOQOL-bref may not be automatically transferred to several dimensions of the OHIP-14. Nevertheless, in these two constructs there are some dimensions that intend to describe the same aspects of quality of life.

Convergent and discriminant validity are considered subcategories or subtypes of construct validity[18]. Measures of constructs that theoretically should be related to each other are, in fact, observed to be related to each other (that is, you should be able to show a correspondence or convergence between similar constructs). Measures of constructs that theoretically should not be related to each other are, in fact, observed to not be related to each other (that is, you should be able to discriminate between dissimilar constructs)[19-20].

The measurements of quality of life have several applications: population studies on the perception of health conditions, measurements of the results in healthcare services, clinical trials and economical analyses that focus on the monetary cost needed for assuring better quality of life[19]. In relation to the instruments of quality of life, the use of simultaneously generic and specific measurements may demonstrate broader results than when applied individually[21]. According to the literature, there are no studies comparing the dimensions of WHOQOL-Bref and OHIP-14. The hypothesis of the present study is that these dimensions are convergent. The objective was to investigate if there is convergent validity between the dimensions of WHOQOL-Bref and OHIP-14 questionnaires.

Methods

Sample

The present study was based on data collected with both questionnaires WHOQOL-Bref and OHIP-14, in a larger study carried out during 2004, about the effects of oral diseases on general health and quality of life of older people living in the city of Carlos Barbosa, Rio Grande do Sul, Brazil[22]. Participants were randomly selected from the municipality register of persons aged 60 years or more. After contacting 983 older persons, 872 accepted to take part and were evaluated in the present study. Further details regarding sampling are shown in a paper published previously[23]. This study was carried out after the approval by the Ethics Comitte of the Faculty of Dentistry of Piracicaba, UNICAMP (protocol 055/2004) and all participants provided written consents.

Study measures

Data collection comprised of face-to-face interviews conducted in participant's homes or community clubhouses. Participants were informed about study objectives and were asked to give signed informed consents. A research assistant trained by an experienced researcher read all questions aloud and registered participants answers into the standardized questionnaire. The average duration of the interview was 1 hour.

Socio-demographic data included information regarding age, sex, marital status (not married or married), schooling (<4 years, 4 years or >4 years of formal education), monthly income (=<1 minimum wage or >1 minimum wage, i.e. 1 Brazilian minimum wage was equivalent to U$219.5, during the data collection period) and geographic location of the participant's residence (rural or urban).

The WHOQOL-Bref contains 26 questions evaluating four different domains of quality of life: physical (seven questions), psychological (six questions), social relations (three questions), and environmental (eight questions). In the physical domain, the participants answered questions such as, 'To what extent do you feel that physical pain prevents you from doing what you need to do?' or 'Do you have enough energy for everyday life?'. In the psychological domain, the participants answered questions like, 'How much do

you enjoy life?' or 'Are you able to accept your bodily appearance?'. In the social relations domain, the participants answered questions such as: 'How satisfied are you with your personal relationships?'. The response scales used assessed 'how much', 'how completely', 'how often', 'how good' or 'how satisfied' the older persons felt in the previous 2 weeks. Responses were in a five-point Likert interval scale. The score range for each WHOQOL-Bref item is 1–5, whilst the score range for each WHOQOL-Bref dimension is 4–20. The lower scores imply poorer quality of life. The present study used the validated Brazilian Portuguese version of the WHOQOL-Bref.

The OHIP-14 is composed of fourteen questions, two for each one of the seven dimensions of the instrument. In the functional limitation dimension, the participants responded to questions such as, 'Have you had trouble pronouncing any words because of problems with your teeth, mouth or dentures?'. In the physical pain dimension, they were asked questions as, 'Have you had painful aching in your mouth?'. Questions in the psychological discomfort dimension were as, 'Have you been self-conscious because of your teeth, mouth or dentures?'. In the physical disability dimension, participants were asked, 'Have you had to interrupt meals because of problems with your teeth, mouth or dentures?'. In the psychological disability dimension: 'Have you been a bit embarrassed because of problems with your teeth, mouth or dentures? '. Questions in the social disability dimension were for example, 'Have you had difficulty doing your usual jobs because of problems with your teeth, mouth or dentures?'. Participants were asked in the handicap dimension, 'Have you felt that life in general was less satisfying because of problems with your teeth, mouth or denture?'. The responses were classified through the Likert scale with five options ranging from 'never' (0) to 'very often' (4). The lower scores imply better oral health related quality of life. The present study used the validated Brazilian Portuguese version of the OHIP-14.

Procedures for data analysis

First Analysis

Socio-demographic data was analyzed through descriptive statistics, including mean, standard deviation, and relative frequency. Analysis of the WHOQOL-Bref and OHIP-14 questionnaires also used the same descriptive statistics, but included the median and the quartiles.

Second Analysis

In the present work, the dimensions of OHIP-14 and WHOQOL-Bref questionnaires were correlated by affinity. The physical dimension of the WHOQOL-Bref questionnaire, contemplating questions related to pain, discomfort, energy, fatigue, and capacity for working, was correlated with functional limitation, physical pain, physical disability, and handicap of the OHIP-14 questionnaire, which assesses questions related to painful aching, discomfort eating and inability to function. The psychological dimension of the WHOQOL-Bref contains questions on feelings, appearance and self-esteem, and it was correlated with the psychological discomfort and psychological disability dimensions of the OHIP-14 that assesses questions on tensing and embarrassment of the oral condition. The social dimension of the WHOQOL-Bref evaluates questions on the social support and personal relations, and it was correlated with the social disability of the OHIP-14 that assesses questions related to being irritable with others and difficulty doing usual jobs because of oral problems. The environmental dimension of the WHOQOL-Bref involves leisure questions, transportation and financial resources; this last dimension was not correlated with OHIP-14 dimensions, for not presenting a similar aspect in the assessment of quality of life. The scheme of hypothesized correlations has been presented in figure 1.

Third Analysis

WHOQOL-Bref and OHIP-14 reliabilities were tested by the means of Cronbach's Alpha Coefficient. Rowland et al. (1991)[24] recommended the minimum value of 0.70 by

considering that the items assess the same construct consistently. Similar constructs should reveal a correspondence or convergence between them, whilst dissimilar constructs should allow for discrimination between them [19]. The convergence between WHOQOL-Bref and OHIP-14 dimensions was analyzed by Spearman's correlation coefficients. Correlations between theoretically similar measures should be high, while correlations between theoretically dissimilar measures should be low. According to Huang et al. (2006)[25], similar constructs were moderately to strongly correlated ($r \geq 0.40$), while dimensions measuring heterogeneous constructs were weakly correlated ($r < 0.40$). In this study, we used the value of $r \geq 0.40$ as a cutoff point for convergence and $r < 0.40$ for divergence between the constructs. Thus, it is expected that the correlations between the dimensions of WHOQOL-Bref and OHIP-14 questionnaires are negative, once measuring scales that are opposite. A negative correlation can be interpreted as a positive association, because an increase of the WHOQOL-Bref score implies better quality of life, while the lower scores of the OHIP-14 also imply better quality of life.

All analyses were performed using SPSS 12.0 (SPSS Inc., Chicago, IL, USA) software for statistical analysis.

Results

In relation to the socio-demographic data of the studied sample, there was a greater participation of women (64.6%); the mean age was of 68.5 (± 6.7) years old and they were residents of the rural zone (52.1%). Most of the participants were married (71.6%). Participants had 4 years of formal education (40.8%) and income of up to one minimum wage (58.1%).

The means for all four domains of the WHOQOL-Bref and for all seven dimensions of the OHIP-14 are presented in Table 1. The domain with the highest mean in the WHOQOL-Bref was the social domain (18.24$\pm$2.30), with a median of 20.00 (16.00-20.00). The physical

pain dimension in the OHIP-14 presented the highest mean (1.76±2.03), with a median of 1.00 (0.00-3.00).

Cronbach's Alpha Coefficient for the WHOQOL-Bref questionnaire was 0.80, and for the OHIP-14 it was 0.86.

The correlation between dimensions of both questionnaires is presented in Table 2. All correlations analyzed were significant, negative and had low magnitude. The greatest negative correlation can be found amongst the WHOQOL-Bref psychological domain and the OHIP-14 psychological discomfort dimension.

Discussion

To our knowledge, this is the first study that correlates dimensions of the WHOQOL-Bref and OHIP-14 questionnaires. We have related dimensions of both questionnaires that are conceptually similar, but these questionnaires measure different aspects of quality of life related to health. Thus, a negative correlation can be interpreted as a positive association, because WHOQOL-Bref and OHIP-14 questionnaires measuring scales that are opposite. The correlations between dimensions of both questionnaires had low magnitude. Despite the fact that both instruments have related dimensions, they measure physical, psychological and social relations differently.

In this study, the low correlations between the dimensions of WHOQOL-Bref and OHIP-14 questionnaires found may be explained by the fact that theoretically different constructs must not be highly related among themselves. It should be noted that the quality of life related to oral health is conceptually different from the quality of life in general[3], and that the instruments of quality of life related to oral health have been focused on negative experiences and functional inability caused by oral problems[26]. The WHOQOL-Bref is a generic instrument of quality of life, that is, it is not directed for assessing dimensions

normally affected by a specific health problem. However, the OHIP-14, which is a specific indicator, was developed aiming to capture impacts that are related to oral conditions.

Quality of life is a multidimensional concept related to the fact that life involves multiple dimensions: material, physical, social, and psychological, among others[13]. Quality of life related to health includes aspects related to health, but also excludes others more generically, which are contemplated in the expanded approach of quality of life, for instance, the environmental dimension[14]. Studies on oral health and quality of life derive from approaching four dimensions: pain and discomfort, functional aspects, psychological and social aspects[7].

The WHOQOL was created based on the assumption that quality of life is a subjective construction (individual perception), it is multidimensional (involves cultural, social and environmental aspects), and it encompasses not only positive aspects but also negative ones[14]. The multidimensional nature of the construct was validated from the emergence of four great dimensions or factors: (a) physical – individual's perception on his physical condition; (b) psychological – individual's perception on his affective and cognitive condition; (c) social – individual's perception on his social relationships and his social roles adopted in life; (d) environmental – individual's perception on several aspects related to the environment where he lives[13].

The OHIP was developed from the necessity of determining the real impact of oral problems on the individuals' lives, that is, in order to provide a broader measuring of the dysfunction, discomfort and disability attributed to the oral condition[28]. The model used for developing the conceptual dimensions of the OHIP construct was Locker's theoretical model (1988)[29]. In this model, disease may lead to impairment, defined as an anatomical loss or abnormality – a tooth loss, for instance. This impairment, then, may lead to a functional limitation, described as the functional loss of parts of the body or systems, for instance,

difficulty of hearing certain sounds. The impairment may also bring pain or discomfort, not only physical but psychological as well. One or the other may lead to psychological or social disability, described by the author as any limitation or lack of ability for realizing daily routine activities[29]. This model is based on the classification of the World Health Organization in which the impact of diseases has been categorized in a hierarchy that ranges from the individual's apparently primary mild symptoms until the incapacitation that affects his social roles[30].

According to Allen et al. (1999)[31], the specific problems of instruments related to oral health allow for better measuring of the aspects of quality of life than the generic instruments of quality of life, such as, for instance, SF-36 (Medical Outcomes Study 36-Item Short-Form Health Survey). Allen and McMillan (2003)[32] also utilized OHIP and SF-36 instruments for measuring the impact of dental treatment on the quality of life of adult individuals, and found that the constructs that allow measuring specific aspects related to oral health are more sensitive than instruments focused on general health. In this study, the dimensions predicted as those that assess similar aspects did not correlate.

Some authors defend the use of specific instruments in quality of life studies, arguing that these may help elucidate the characteristics related to specific health issues, while other authors state that such specific instruments are restricted to symptoms and to dysfunctions, contributing little for a better understanding of quality of life aspects[33]. Within a broader health model, a general quality of life instrument may be more fruitful, in both the perspective of engendering knowledge for better health care for individuals and for the social group[34].

Any study of oral health assessing quality of life in a broader sense may benefit from the use of both specific and generic instruments, once the mouth is part of a body and of a body that is inserted within a social environment. The human body is not only a biological system: the body is immersed in culture, thus being affected by social and cultural facts,

norms, and values, such as religion, work, family, social class, among other things. The mouth has both biological (chewing) and social (speaking, smiling, communicating) uses, it connotes proximity and intimacy in daily social interactions, and it is a tool for communicating with the world and to society [35].

The interpretation of the results must be done cautiously, since WHOQOL-Bref and OHIP-14 evaluate what respondents think about their quality of life following different periods of time. While WHOQOL-Bref considers the last two weeks, OHIP-14 considers the last six months. One important criticism to the use of the last two weeks in the WHOQOL-Bref is that is health status is unlikely to change substantially in such a short period of time. The OHIP-14 questionnaire, though, aims to assess the impact of oral problems during 6 months, once it presents its structure as a characteristic, since the approach of negative forms of health aspects as well as considering that the absence of negative conditions would necessarily imply a positive status. However, it is also important to take into account that the oral health problems and impacts that are experienced by older persons are chronic in its nature, meaning that they are experienced for periods that are much longer than two weeks or six months.

Some limitations must be considered in the interpretation of the results of the present study. The generalization of the results may be affected by the characteristics of the sample, mainly consisted by older individuals with low income from a rural community.

Conclusion

We have related dimensions of WHOQOL-Bref and OHIP-14 questionnaires that are conceptually similar, but these questionnaires measure different aspects of quality of life related to health. In this study, all correlations analyzed had a positive association of low magnitude. Correlations between theoretically similar measures should be high, while correlations between theoretically dissimilar measures should be low. Despite the fact that

both instruments have related dimensions, they measure physical, psychological and social relations differently. Further studies involving different age groups and in different socio-cultural contexts will certainly contribute for a better understanding of the assessments of quality of life, and of the quality of life related to health through WHOQOL-Bref and OHIP-14 questionnaires.

Conflict of interest The authors declare that they have no conflict of interest.

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Table 1. Score distributions of the WHOQOL-Bref and OHIP-14 (n = 872).

Questionnaire-Dimension	Number of items	Mean ± SD	Median (p25 - p75)
OHIP- Functional Limitation	2	0,84 ± 1,53	0,0 (0,0 - 1,0)
OHIP- Physical Pain	2	1,76 ± 2,06	1,0 (0,0 - 3,0)
OHIP-Psychological Discomfort	2	1,12 ± 2,02	0,0 (0,0 - 2,0)
OHIP- Physical Disability	2	0,85 ± 1,51	0,0 (0,0 - 1,0)
OHIP- Psychological Disability	2	0,49 ± 1,24	0,0 (0,0 - 0,0)
OHIP-Social Disability	2	0,17 ± 0,68	0,0 (0,0 – 0,0)
OHIP-Handicap	2	0,32 ± 0,96	0,0 (0,0 – 0,0)
WHOQOL- Physical	7	14,79 ± 2,24	14,85 (13,14 – 16,57)
WHOQOL-Psychological	6	15,94 ± 1,82	16,66 (14,66 – 17,33)
WHOQOL-Social	3	18,24 ± 2,30	20,00 (16,00 – 20,00)
WHOQOL-Environment	8	15,95 ± 2,11	16,00 (14,50 – 17,50)

Table 2. Correlation coefficients between WHOQOL-Bref and OHIP-14 (n = 872).

	WHOQOL- Physical	WHOQOL- Psychological	WHOQOL- Social
OHIP- Functional Limitation	-0,164*	-	-
OHIP- Physical Pain	-0,262*	-	-
OHIP- Psychological Discomfort	-	-0,269*	-
OHIP- Physical Disability	-0,196*	-	-
OHIP- Psychological Disability	-	-0,210*	-
OHIP- Social Disability	-	-	-0,217*
OHIP- Handicap	-0,125*	-	-

Note: All* p value < 0.0001.
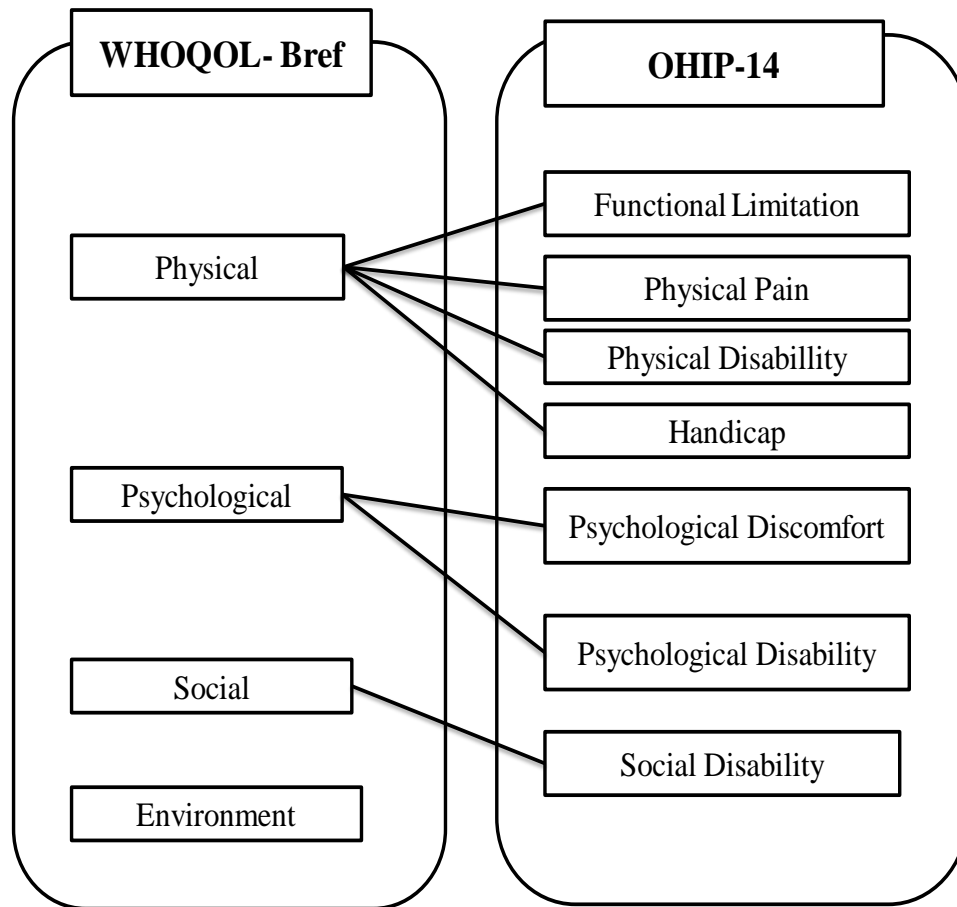
Fig.1 Correlation between the WHOQOL-Bref and OHIP-14.

MANUSCRITO II

Oral Health Impact Profile-14: a Unidimensional Scale?

Camila Mello dos Santos, Branca Heloisa de Oliveira, Paulo Nadanovsky, Juliana Balbinot Hilgert, Roger Keller Celeste, Fernando Neves Hugo.

Abstract

The aim was to investigate the dimensional structure of the Oral Health Impact Profile -14 (OHIP-14). Subjects came from Rio de Janeiro (N=504) and Carlos Barbosa (N=872) Studies in Brazil. An Exploratory Factor Analysis (EFA) was performed in the Rio Janeiro and in the Carlos Barbosa Studies to identify the latent dimensions of OHIP-14. Confirmatory Factor Analysis (CFA) was applied in both studies to compare the one-dimensional structure found in EFA and the three-dimensional structure proposed. This factorial structure was assessed using ordinary parameters of goodness of fit indices. In the Rio de Janeiro Study, the eigenvalue was 9.2 and this one factor explained 65.6% of the total variance, while in the Carlos Barbosa Study the eigenvalue was 7.9 and this one factor explained 56.6%. The CFA carried out indicated an adequate fit of the 1-factor model for the Rio de Janeiro Study (RMSEA= 0.04, CFI= 0.98, TLI=0.98) and for the Carlos Barbosa Study (RMSEA= 0.05, CFI= 0.97, TLI=0.97). Our findings suggest that the OHIP-14 is a single construct scale.

Key words: epidemiology, oral health, quality- of- life, statistics, factor analysis.

Introduction

Oral health-related quality of life (OHRQoL) has been defined as "the absence of negative impacts of oral conditions on social life and a positive sense of dentofacial self-confidence"[1]. Theoretical models characterize OHRQoL as multidimensional, including physical, psychological and social dimensions[2,3]. In this context, the term dimension is defined as items that measure the same construct [4].

Among the various OHRQoL instruments, the Oral Health Impact Profile (OHIP) was developed with the aim of providing a comprehensive measure of self-reported dysfunction, discomfort and disability attributed to the oral condition[5]. The original OHIP contains 49 questions grouped in seven dimensions formulated on Locker's oral health model adapted from the World Health Organization's International Classification of Impairments, Disabilities, and Handicaps[5-6]. The OHIP-14 was developed as a shorter version of the OHIP-49[7]. This instrument is one the most internationally OHRQoL indicators, available in several languages (Portuguese, Chinese, French, German, Japanese, Malaysian, Spanish, Somalian,...) and has been show to have face and content validity in different populations[8,9].

A Medline search that was performed in the beginning of 2012 found 55 articles that were published in the year 2011 and contained the keyword OHIP-14. Approximately eighty percent of the studies surveyed used the OHIP-14 as a single score, meaning that the authors are assuming only one dimension. In the original development of the OHIP-14, exploratory analyses revealed a single underlying factor that explained almost 70% of the variance. The results indicate that there may be one single construct underlying the responses to OHIP questions. The construct could be interpreted as representing oral ill-health[7]. Thus, a general supra-dimension "oral illness" might underlie many dimensions[10]. Additionally, OHIP as currently conceived does not have its dimensional validity well described - despite its

construct validity being well reported[9] and its items may not measure the seven separate constructs of oral health as originally devised[11].

A few studies have evaluated the dimensional structure of OHIP, presenting contradictory results. Two studies used Exploratory Factor Analysis (EFA)[10,12] and only one used Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA)[13]. Among those that performed EFA, one used OHIP-49 and found four dimensions termed 1) oral functions, 2) orofacial pain, 3) psychosocial impact and 4) appearance[10]. The other used OHIP-14 and described that a range of OHIP items loaded highly in two factors[12]. More recently, CFA showed a three-factor structure for OHIP-14[13]. In this study, Oral Impacts on Daily Performance (OIDP) and the OHIP-14 were applied simultaneously. These results confirmed a set of three underlying factors in both questionnaires in different components interpreted as functional limitation, pain-discomfort and psychosocial impacts, with high consistency, integrated within the Locker model[6].

Many OHRQoL questionnaires are a combination of formative and reflective measurement models. Although this composition has a vast impact on the questionnaires construction and evaluation, it is generally ignored[14]. Construct validity is an assessment of the success of the translation of ideas or theories into actual programs or measures[15]. Dimensional validity is important because this structure indicates how the instrument must be concretely utilized. Further analysis on the dimensionality and the adequacy of OHIP can help improve the interpretation of this instrument. This study is important to the discussion about the construct validity of the OHIP. Therefore, the objective of this study was to investigate the dimensional structure of the Oral Health Impact Profile -14.

Material and methods

This paper reports findings from a secondary analysis of data collected in Rio de Janeiro and Carlos Barbosa Studies. Both studies used the Brazilian version of the OHIP-14. The Rio de Janeiro Study evaluated the measurement properties of the Brazilian version of the

OHIP-14 in postpartum women[9]. The Carlos Barbosa Study selected a sample of older adults similar to the sample in which the OHIP was originally developed (i.e., older adults)[16].

Sample

Rio Janeiro Study

Data were obtained from a cross-sectional study designed to evaluate the measurement properties of the Brazilian version of the short form of the Oral Health Impact Profile (OHIP14). A consecutive sample of 504 postpartum women admitted to a Public Maternity Hospital, was invited to participate from January until February 2002 in the city of Rio de Janeiro, Rio de Janeiro State, Brazil. The OHIP-14 was administered in the form of interviews to 504 people. Further details regarding sampling are available elsewhere[9].

Carlos Barbosa Study

Data were obtained from a cross-sectional study designed to assess the effects of oral diseases on general health and quality of life of older people living in the city of Carlos Barbosa, Rio Grande do Sul State, Brazil. Participants were randomly selected from the municipality register of persons aged 60 years or older. After contacting 983 older persons, 872 were evaluated during the second semester of 2004. The OHIP-14 was administered in the form of interviews to 848 people. More information on sampling is presented elsewhere[16].

Instrument

Oral health impact profile

The OHIP-14 comprises 14 items that explore seven dimensions of impact: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap. The responses were classified through a Likert scale with five options ranging from 'never' (0) to 'very often' (4).

Data analysis

An Exploratory Factor Analysis (EFA) was applied to the data from the Rio de Janeiro Study and Carlos Barbosa Study. Later, Confirmatory Factor Analysis (CFA) was implemented to the data from the Rio de Janeiro Study and Carlos Barbosa Study to verify the

dimensional structure that was captured from EFA and the three-dimensional structure proposed by Montero et al. (2010)[13]. Figure 1 shows the theoretical model tested.

EFA was performed in the Rio Janeiro Study (n = 504) and in the Carlos Barbosa Study (n = 848) to identify the latent dimensions of OHIP-14. There are not set rules for establishing the optimum number of factors[17]. The Kaiser-Guttman rule of thumb, which specifies that only factors with an eigenvalue larger than 1.0 should be retained, was adopted, in combination with screeplot elbow and dimensions theoretically postulated. The current analysis used the geomin oblique rotation[17] and polychoric correlation matrix. Items were considered to load on a factor if they had a correlation greater than 0.3 with that factor[18]. Communality measures the common factor variance of an item. A communality of 0.3 or less indicates that a variable may be unreliable[18] while a value greater than 0.3 indicates that a large percentage of the sample variance of each item is accounted for by the factors.

EFA showed that one factor was appropriate for both datasets. Then, CFA was applied to the data from the Rio Janeiro Study (n = 504) and Carlos Barbosa Study (n = 848) to compare the one-dimensional structure found in EFA and the three-dimensional structure proposed by Montero et al. (2010)[13]. To this end a Confirmatory Factor Analysis (CFA) was implemented employing Mplus' robust weighted least squares mean and variance adjusted (WLSMV) estimator[17]. The measurement errors (uniqueness) and loadings were calculated.

The goodness-of-fit of the model to the data was evaluated using the ordinary comparative parameters provided by the software. The Root Mean Square Error of Approximation (RMSEA) incorporates a penalty function for poor model parsimony[17]. Values under 0.06 suggest close approximate (adequate) fit, whereas values above 0.10 indicate poor fit and that the model should be rejected[17]. The Comparative Fit Index (CFI) and the Tucker-Lewis index (TLI) represent incremental fit indices[17] contrasting the hypothesized model to a more restricted nested baseline model, the "null model". Both range from zero to

one and values > 0.9 are indicative of adequate fit[17]. An overall conclusion about the fit of each model can be obtained by considering these indices simultaneously[19].

Factor correlations were evaluated in the three-dimensional structure. Factor correlations show the strength of association between factors. If there is discriminant validity, the relationship between measures from different dimensions should be low[15]. The Average Variance Extracted (AVE) assesses the amount of variance captured by a common factor in relation to the amount of variance due to random measurement error[20]. It is a function of the relationship between the standardized item factor loadings and the related measurement error (uniqueness) that refers to the portion of an indicator not explained by the latent factor[21]. Values vary from 0 to 1. A factor shows convergent validity if AVE $\geq$ 0.50, which is indicative that at least 50% of the variance in a measure is due to the hypothesized underlying trait. Factor-based convergent validity is questionable if AVE <0.50 since the variance due to measurement error is greater than the variance due to the construct[20].

All analyses were performed using Mplus version 6.0 (Muthén & Muthén, Los Angeles, USA) software for statistical analysis.

Results

The EFA of the OHIP-14 showed that one factor with eigenvalue above 1 emerged from the factorial analysis and was supported by the elbow in the corresponding scree plot of eigenvalues. In the Rio de Janeiro Study, the eigenvalue was 9.2 and this one factor explained 65.6% of the total variance, while in the Carlos Barbosa Study the eigenvalue was 7.9 and this one factor explained 56.6%. All items in both studies had loadings that exceeded 0.5 and communality values of over 0.3 indicated that the items were reliable (Table 1).

The CFA (Table 2) carried out indicated an adequate fit of the 1-factor model for the Rio de Janeiro Study (RMSEA= 0.04, CFI= 0.98, TLI=0.98) and for the Carlos Barbosa Study (RMSEA= 0.05, CFI= 0.97, TLI=0.97). The loadings were high in both studies. The 3-factor model showed adequate fit for the Rio de Janeiro Study (RMSEA= 0.04, CFI= 0.99,

TLI=0.98) and for the Carlos Barbosa Study (RMSEA= 0.05, CFI= 0.98, TLI=0.97). The measurement error (uniqueness) values were appropriate for the 1-factor model and 3-factor model in both studies. Although, the 3-factor model showed adequate fit, the factor correlations were fairly high suggesting that they may not represent three distinct factors [Rio de Janeiro Study (f1↔f2= 0.95, f1↔f3= 0.84, f2↔f3=0.82) and Carlos Barbosa Study (f1↔f2= 0.92, f1↔f3= 0.77, f2↔f3=0.81)]. In the Rio de Janeiro Study, the AVE was factor 1= 0.67, factor 2= 0.67 and factor 3=0.44, indicated that f1 and f2 have convergent validity. In the Carlos Barbosa Study, the AVE was factor 1=0.64, factor 2= 0.42 and factor 3= 0.28, these results showed that only f1 has convergent validity.

Discussion

The present study investigated the dimensional structure of the Oral Health Impact Profile (OHIP-14). To our knowledge, this is the first study that has focused on confirmatory factor analysis structure of OHIP-14 using two different samples. In the present study, the EFA and the CFA identified and respectively confirmed an adequate parsimonious model of the 1-factor model for the Rio de Janeiro Study and for the Carlos Barbosa Study. A similar situation was observed in the derivation of a short-form of the OHIP-49, a single underlying factor with an eigenvalue of 15.1 that accounted for 69.2 % of the variance[7]. Nevertheless, another study observed three components that had eigenvalues ranging from 1.6 to 3.8 and they explained 58.1% of variation[13]. Although OHRQoL may be a multidimensional construct, our findings suggest that the OHIP-14 is a single construct scale.

While EFA has been used to evaluate the dimensionality of a set of multiple indicators by uncovering the smallest number of interpretable factors needed to explain the correlations among them, CFA requires a priori specification of a model supported by theory, including the number of factors that exist in that data and knowledge of which items are related to each factor[17]. In our study, the information necessary to specify the model was captured from EFA and the three-dimensional structure proposed by Montero et al. (2010)[13]. In the present study,

the CFA confirmed that a 1-factor model fitted in both samples. In contrast, other study have identified a 3-factor structure for OHIP-14. However, this study found that for the OHIP-14 the first factor strongly dominated the factorial structure[13]. Additionally, some authors have considered OHQoL in adults or older adults as a single construct[22-23].

Although, the 3-factor model showed adequate fit, the factor correlations were fairly high suggesting that they may not represent three distinct factors. In CFA, factor correlations which exceed 0.85 are typically used as the criterion for poor discriminant validity[17]. In this study, the correlations between domains proposed by Montero et al. (2010)[13]: Pain and Psychosocial were 0.95 (sample of Rio de Janeiro Study) and 0.92 (sample of Carlos Barbosa Study); Pain and Functional limitation were 0.82 (sample of Rio de Janeiro Study) and 0.81 (sample of Carlos Barbosa Study), and Psychosocial and Functional limitation were 0.84 (sample of Rio de Janeiro Study) and 0.77 (sample of Carlos Barbosa Study). These high factor correlations suggest that they may not represent distinct factors and indicate that the OHIP has been erroneously separated. The AVE was low for f3 in the Rio de Janeiro Study and for f2 and f3 in the Carlos Barbosa Study, indicating that convergent validity was questionable in the 3-factor model. It is thus laudable that the OHIP-14 may be described as a single factor. Our results show that a general factor "oral illness" might underlie many dimensions[10], thus supporting this claim.

The present findings may have important implications for clinical practice and research. The OHRQoL assessment tool is used to identify and evaluate how oral problems interfere in people's daily lives, influencing their quality of life. In addition, researchers studying oral health problems have used OHRQoL as an outcome measure to analyze treatment effects, trends in oral health and population-based needs assessment[2]. The OHRQoL assessments are being incorporated into observational clinical studies and trials to measure effectiveness of treatment with the goal of improving care[2]. In many researches utilizing

OHIP, authors report scores for each originally proposed dimension. However, if the scale does not have adequate construct validity, such conclusions would not be reliable and it is not safe to assume that the different dimensions measure what they say they do[11].

Conclusion

The findings of the present study suggest that OHIP-14 may not evaluate the oral impacts on quality of life on a multidimensional perspective, but in a single dimension, thus refuting the hypothesis that it is multidimensional. The generalization of the results may be affected by characteristics of the sample, composed mainly of whites. Further studies are needed to corroborate our results in other, broader settings. Furthermore, studies directed toward specific oral conditions would be able to find which dimensions are mainly affected in such conditions. Further studies involving item response theory analysis will certainly contribute for a better understanding of the dimensionality of the OHIP-14.

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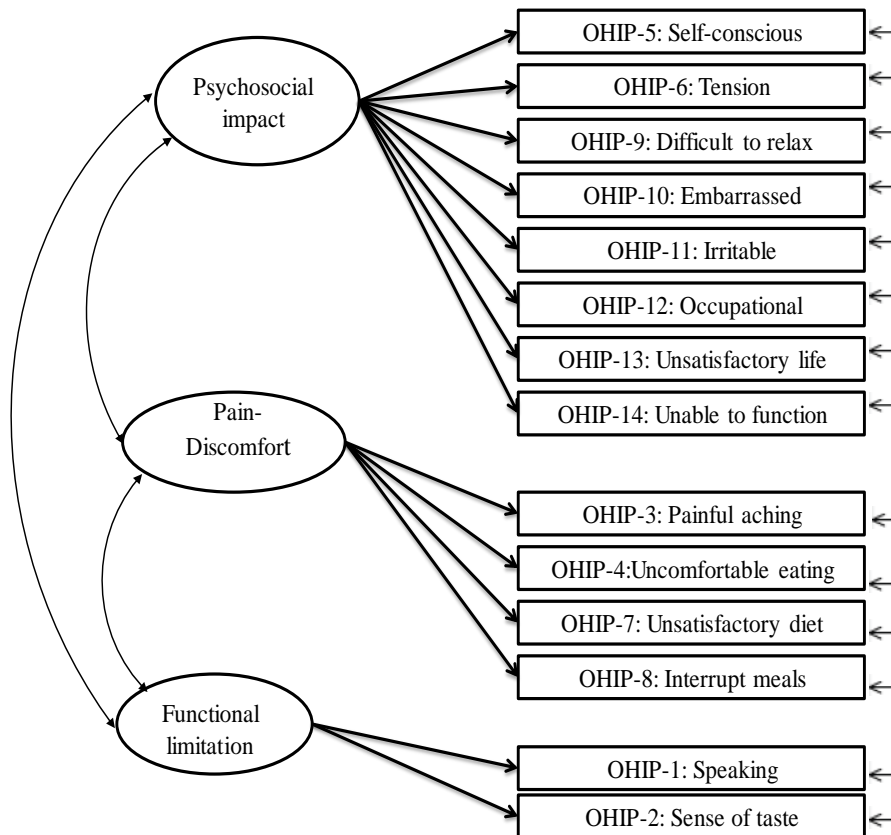
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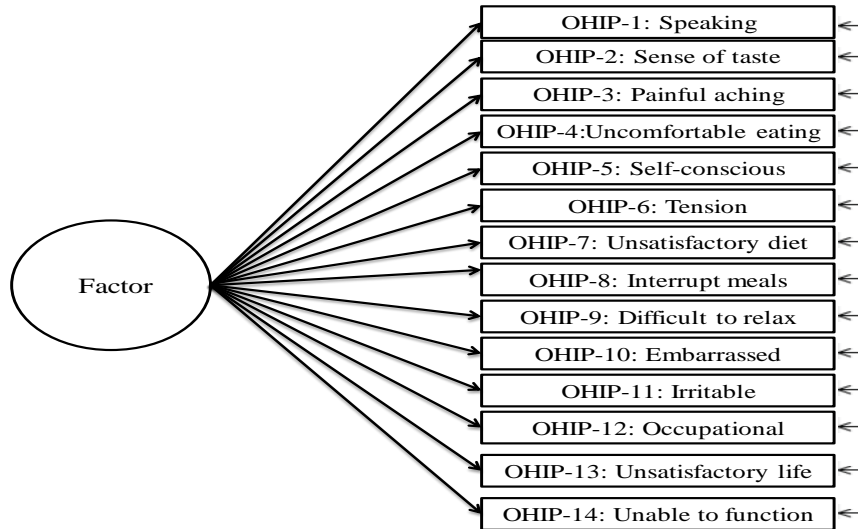
Three-dimensional

Figure 1. Theoretical model tested.

Table 1. Exploratory Factor Analysis of the OHIP-14 (all loadings shown > 0.5).

| | Rio de Janeiro Study | | Carlos Barbosa Study | |
| | Factor 1 | | Factor 1 | |
	$\lambda i_{(1)}$	h^2	$\lambda i_{(1)}$	h^2
OHIP-1: Speaking	0.69 (0.05)	0.48	0.58 (0.03)	0.34
OHIP-2: Sense of taste	0.65 (0.04)	0.43	0.55 (0.03)	0.31
OHIP-3: Painful aching	0.80 (0.02)	0.66	0.57 (0.03)	0.33
OHIP-4: Uncomfortable eating	0.80 (0.02)	0.65	0.75 (0.02)	0.57
OHIP-5: Self-conscious	0.74 (0.03)	0.56	0.90 (0.01)	0.82
OHIP-6: Tension	0.90 (0.01)	0.82	0.93 (0.01)	0.88
OHIP-7: Unsatisfactory diet	0.89 (0.02)	0.81	0.68 (0.02)	0.47
OHIP-8: Interrupt meals	0.80 (0.02)	0.65	0.77 (0.02)	0.61
OHIP-9: Difficult to relax	0.89 (0.02)	0.80	0.83 (0.02)	0.70
OHIP-10: Embarrassed	0.61 (0.04)	0.38	0.60 (0.04)	0.37
OHIP-11: Irritable	0.79 (0.03)	0.64	0.60 (0.04)	0.37
OHIP-12: Occupational	0.87 (0.02)	0.77	0.80 (0.03)	0.65
OHIP-13: Unsatisfactory life	0.80 (0.03)	0.66	0.76 (0.03)	0.59
OHIP-14: Unable to function	0.85 (0.03)	0.74	0.88 (0.04)	0.79
Eigenvalues	9.20		7.90	
Variance explained (%)	65.6		56.6	

$\lambda i_{(1)}$Loadings. In brackets: Standard error. h^2: Communality.

Table 2: Dimensional models of OHIP-14: One-dimensional Confirmatory Factor Analysis and Three-factor Confirmatory Factor Analysis.

	Rio de Janeiro Study						Carlos Barbosa Study				
	1-Factor CFA		3-Factor CFA				1-Factor EFA		3-Factor CFA		
	Factor 1		Factor 1	Factor 2	Factor 3		Factor 1		Factor 1	Factor 2	Factor 3
	$\lambda i_{(1)}$	δ	$\lambda_{(1)}$	$\lambda_{(2)}$	$\lambda_{(3)}$	δ	$\lambda_{(1)}$	δ	$\lambda(1)$	$\lambda(2)$	$\lambda(3)$
OHIP-1	0.69(0.55)	0.52			0.80(0.06)	0.35	0.58(0.03)	0.66			0.71(0.04)
OHIP-2	0.65(0.04)	0.57			0.75(0.05)	0.42	0.55(0.03)	0.69			0.67(0.04)
OHIP-3	0.80(0.02)	0.34		0.82(0.02)		0.31	0.57(0.03)	0.67		0.59(0.03)	
OHIP-4	0.80(0.02)	0.35		0.81(0.02)		0.33	0.75(0.02)	0.43		0.78(0.02)	
OHIP-5	0.74(0.03)	0.44	0.75(0.03)			0.43	0.90(0.01)	0.18	0.90(0.01)		
OHIP-6	0.90(0.01)	0.18	0.91(0.01)			0.16	0.93(0.01)	0.12	0.94(0.01)		
OHIP-7	0.89(0.02)	0.19		0.91(0.02)		0.16	0.68(0.02)	0.53		0.70(0.02)	
OHIP-8	0.80(0.02)	0.35		0.81(0.02)		0.33	0.77(0.02)	0.39		0.81(0.02)	
OHIP-9	0.89(0.02)	0.20	0.89(0.02)			0.19	0.83(0.02)	0.30	0.84(0.02)		
OHIP-10	0.61(0.04)	0.62	0.61(0.04)			0.61	0.60(0.04)	0.63	0.61(0.04)		
OHIP-11	0.79(0.03)	0.36	0.79(0.03)			0.36	0.60(0.04)	0.63	0.61(0.04)		
OHIP-12	0.87(0.02)	0.23	0.88(0.02)			0.22	0.80(0.03)	0.35	0.81(0.03)		
OHIP-13	0.80(0.03)	0.34	0.81(0.03)			0.33	0.76(0.03)	0.41	0.77(0.03)		
OHIP-14	0.85(0.03)	0.26	0.86(0.03)			0.25	0.88(0.04)	0.21	0.89(0.04)		
AVE			0.67	0.67	0.44				0.64	0.42	0.28
f1↔f2[*]			0.95						0.92		
f1↔f3[*]			0.84						0.77		
f2↔f3[*]			0.82						0.81		
RMSEA	0.04		0.04				0.05		0.05		
CFI	0.98		0.99				0.97		0.98		
TLI	0.98		0.98				0.97		0.97		

λ :Loadings. In brackets:Standard error. δ:Measurement errors (uniqueness). AVE:Average Variance Extracted. [*]Factors correlation. RMSEA:Root Mean Square Error of Approximation. CFI:Comparative Fit Index. TLI:Tucker-Lewis Index.

MANUSCRITO III

TESTING THE APPLICABILITY OF A CONCEPTUAL MODEL OF ORAL HEALTH-RELATED QUALITY OF LIFE IN COMMUNITY-DWELLING OLDER PEOPLE

Camila Mello dos Santos, Roger Keller Celeste, Juliana Balbinot Hilgert, Fernando Neves Hugo.

Abstract

The aim was to test Wilson and Cleary's conceptual model of the direct and mediated pathways between clinical and nonclinical variables in relation to oral health-related quality of life in community-dwelling older people. In this cross-sectional study, a random sample of 578 Southern-Brazilians aged 60 years or more was evaluated. Wilson and Cleary's conceptual model was tested using structural equations modeling including: biological variables, symptom status, functional health, general health perceptions, oral health-related quality of life. Oral health-related quality of life was assessed with the Oral Health Impact Profile-14 (OHIP-14). Sociodemographic information was assessed using a structured questionnaire. In the final model, edentulism was negatively correlated to dissatisfaction of appearance of their dental prostheses (r= -0.25). The worse functional status was correlated with poor oral health perception (r= 0.24). Having >68years of age (r= 0.25), being a female (r= 0.39) and living in rural areas (r= 0.15) had a direct effect on the edentulism. Age had a direct effect on OHIP-14 (r= -0.15). There was an indirect effect of sex on OHIP-14 via functional status (r= 0.12). The final model showed adequate fit (CFI= 0.98, TLI=0.98 RMSEA= 0.03, WRMR=0.90). The present study demonstrates that there are direct and mediated pathways between clinical and nonclinical variables in relation to the oral health-related quality of life in community-dwelling older people. The present findings partially support Wilson and Cleary's model framework, but suggest that further conceptual development requires the inclusion of demographic and socioecomic variables.

key words: quality of life, oral health-related quality of life, structural equation modeling.

INTRODUCTION

Among quality of life instruments, specific ones may better capture the impact of some diseases that are not otherwise captured by general quality of life instruments. Oral health related quality of life (OHRQoL) measures are an important aspect in this issue and there is an increased recognition of the importance of incorporating them in evaluations of oral health. OHRQoL has been defined as "the absence of negative impacts of oral conditions on social life and a positive sense of dentofacial self-confidence",[1] and assess the frequency and∕or severity of functional and psychosocial impacts associated with oral disorders.[2]

The theoretical model of Wilson and Cleary explicitly conceptualizes the pathways between traditional clinical variables and quality of life.[3] Their model used as mediators: symptom status, functional health, general health perceptions. One study reported that worse patient's symptoms predicted a lower functional status; worse daily functioning predicted lower global oral health perceptions;[4] however no quality of life and biological/clinical variables could be included in the model. Another study identified paths linking symptom status directly to general health perceptions and one path linking symptom status directly to quality of life.[5] In relation to OHRQoL, previous studies showed that more severe clinical signs predicted worse patient reported symptoms; that, in turn, were associated with a lower functional status as measured by OHRQoL; and lower OHRQoL predicted worse global oral health perceptions.[6]

Several oral health, health behavior and demographic factors have been associated with OHRQoL.[7, 8] Studies have reported association between OHRQoL and number of teeth, sex, geographic location of the participant's residence, chewing problems, and satisfaction with appearance of teeth in older people.[8-10] In addition, education and income have been associated with OHRQoL in older community-dwelling adults.[11]

A few studies tested the Wilson and Cleary's model, incorporating variables as age, and sex. One study found a path from age to functional status.[5] In addition, this study found that age was not related to measures of symptom status, general health perceptions, or quality of life.[5] Other study revealed a possible interaction effects of age on report of symptom status.[12] One study concluded that the effect of gender on quality of life was indirect through functional status and the direct effect of gender on quality of life was very small and non-significant.[13] However, there have been no studies that have tested the Wilson and Cleary's model in relation to OHRQoL, incorporating variables as sex, age, and presence of natural teeth in elderly population. To facilitate effective interventions, it is necessary to understand the antecedents and consequents of OHRQoL and the pathways underlying it.[6] The aim of the study is to test Wilson and Cleary's conceptual model of the direct and mediated pathways between clinical and nonclinical variables in relation to the oral health-related quality of life in community-dwelling older people.

METHODS

This paper reports findings from a secondary analysis of data collected in a study of older persons in the city of Carlos Barbosa.

Population and Sample

Carlos Barbosa is a city located in southern Brazil, 104 kilometers north of the capital of Rio Grande do Sul State. In 2000, the city had 20.519 inhabitants, among whom 2167 inhabitants were aged 60 and older. In 2004, municipality produced a register of all persons aged 60 years or older, from which 983 non-institucionalized participants were randomly selected, those who had moved away and died before contact was established were considered non elegible, After contact, 13 persons were restricted to bed at home, one person was hospitalised, and 97 persons refused to participate. At the end, 872 individuals agreed to

participate in the study. More information on sampling is presented elsewhere.[14] Data collection involved face-to-face interviews conducted in the participants' homes or in community clubhouses. In addition, oral examinations took place in the dental surgeries provided by the Municipality.[14]

Measures

The Wilson and Cleary's conceptual model links biological variables, symptom status, functional health, general health perceptions, quality of life, and nonmedical factors. The model also links individual and environment characteristics, which were not part of this analysis.

The measures chosen to operationalize Wilson and Cleary's models 1 and 2 (figure 1) are described below. Many variables were dichotomized due to small numbers and/or non-linear relationships. The biological variable was edentulism (dentate=0, edentulous=1) assessed by a clinical exam.[15] Symptom status was assessed using the question: "Are you satisfied with the appearance of your teeth or dental prostheses?" This question was assessed with four categories: very satisfied, satisfied, very dissatisfied, and dissatisfied; then dichotomized as very satisfied/satisfied as 0= satisfied and very dissatisfied/dissatisfied as 1= dissatisfied. Functional status was assessed using the question: "Have you decreased or changed the type and/or amount of food because of problems with your teeth or dental prostheses?" This question was assessed with three categories: never, sometimes, and always; then categorized as never as 0 = never and sometimes or always as 1 = sometimes/always. Oral health perception was measured using the question: "Compared with others your age, how would you rate the health of your mouth overall?''Answers were initially selected from a 5-point Likert scale (excellent, very good, good, fair, and not good). The answers were categorized as excellent, very good or good as 0=good and as fair or poor as 1=not good. Oral

health-related quality of life was assessed with the Oral Health Impact Profile-14 (OHIP-14). The OHIP-14 consists of 14 questions assessing the impact of oral problems in the perception of quality of life. The responses were classified through the Likert scale with five options ranging from 'never' (0) to 'very often' (4). The OHIP-14 scale score ranges from 0 to 56.[16] The OHIP-14 scores were calculated by the additive method, with the response codes for the 14 items constituting the measure being summed up. The higher scores indicate more impacts meaning worse OHRQoL. The arrows in Figure 1 represent the hypothesized linkages between the variables tested in this analysis.

Wilson and Cleary hypothesized pathways between non-adjacent levels. The measures chosen to operationalize Wilson and Cleary's model 2 are described below. The model 2 was performed using the same variables used in the Wilson and Cleary's model 1 plus the demographic and socioeconomic variables (Figure 1). Participants were categorized as follows: age (in years, was categorized using mean of the age distribution of the sample, 0= < 68 years or1= ≥ 68 years); sex (0= male or 1=female); geographic location of the participant's residence (0=urban or 1=rural); schooling (in years, 0=< 4 or 1= ≥4) and monthly income (categorized using the Brazilian minimum wage during the data collection period as $_4$ reference,0= ≤118.00 US dollars or 1= > 118.00 US dollars). As hypothesized by Wilson and Cleary, we predicted that biological variable would be related to the symptom status. This perceived symptom status would be related to functional status which, in turn, would be associated with oral health perception. The oral health perceptions would be related to OHRQoL. We hypothesized that demographic and socioeconomic variables would be related to biological variable and to OHRQoL.

Statistical analysis

Structural equation modeling (SEM) was used for the data analysis. SEM consists of two sub-models: the measurement model which establishes how the latent constructs are

measured and the structural model which analyzes the structural relationships, corresponding to associations between variables. SEM was used to estimate the magnitude and direction of paths between the variables. The standardized coefficients (SC) were interpreted according to Kline,[17] where an SC of about 0.10 indicates a small effect, an SC of about 0.30 indicates a medium effect, and SC > 0.50 indicates a strong effect.

The goodness-of-fit of the model to the data was evaluated using the ordinary comparative parameters provided by the software. An overall conclusion about the fit of each model can be obtained by considering these indices simultaneously.[18] Values under 0.05 for Root Mean Square Error of Approximation (RMSEA) suggest close approximate (adequate) fit, whereas values above 0.10 indicate poor fit. The Comparative Fit Index (CFI) and the Tucker-Lewis index (TLI) represent incremental fit and values > 0.90 are indicative of adequate fit. The Weighted Root Mean Square Residual (WRMR) is a measure for fit of models with categorical observed variables and a value less than 1.0 indicates good fit.

Post Hoc Analysis

Anticipating a possible model misfit and/or foreseeing plausible alternative for paths, the next step consisted in used the Modification Indices (MI). Changes suggested in MI were incorporated in the model 2. MI indicates possible changes that could be made the model better "fit" the data. A MI reflects how much the overall model chi-square decreases if a constrained parameter is freely estimated. Here, MI values equal or above 10 were examined,[19] as well as the theoretical meaningfulness of the changes.

All analyses were performed using Mplus version 6.0 (Muthén & Muthén, Los Angeles, USA) software for statistical analysis.

RESULTS

Data from 578 elderly participants, with no missing data (66% response rate), were analyzed in this study. In this sample, 67.3% were woman, 50.7% aged >68 years, 53.5%

were living in rural areas, 59.7% has >4years of schooling, and 46.7% had earnings >118 US$ at the time of data collection. The proportion of edentulous were 57.6%, 20.6% were dissatisfied with the appearance of their teeth/prosthesis, 30.6% changed the type of food, 34.6% rated their health as regular/poor. Regarding the latent variable, we also calculated OHIP14 scores, the mean values were 5.3 (standard-deviation= +/- 6.5, min=0 max=37) and 76.3% of the individuals had at least one impact (score>0).

The Model 1 hypothesized that the associations between the main adjacent levels of the model would be the dominant pathways. In model 1, we considered only these direct paths, as presented in Figure 1. Contrary to prediction, there was no direct association between biological variable and symptom status (Path A). Three of the direct paths were significant and with strong effect: symptom status-functional status (Path B), functional status-oral health perception (Path C) and oral health perception-OHRQoL (Path D). Fit indices for this model indicated that it did not fit the data well (Model 1 in Table 1).

The model 2 examined the direct and indirect pathways between distal variables and OHIP14 (Figure 1). There was no direct effect between biological variable and symptom status (Path A), dissatisfaction with symptom status were associated with worse functional status (Path B), worse functioning predicted a poor oral health perception (Path C) and poor oral health perception was associated with higher scores in the OHIP-14 (Path D), indicating worse oral health quality of life. There were three significant direct paths leading to the biological variable (edentulism): age (Path E), sex (Path F) and geographic location (Path G). There were two significant direct paths leading to oral health quality of life: age (Path J) and sex (Path K). Fit indices for this model indicated that it improved, but one fit index (WRMSEA) was still not good enough (Model 2 in Table 1). Therefore, the next step was to determine whether a model incorporating the modification indices would fit the data better.

In the final model (Figure 2), there was negative and significant direct effect between biological variable and symptom status (Path A). There was no direct association between symptom status and functional status (Path B). The worse functional status was associated with poor oral health perception (Path C). There was no direct association between oral health perception and oral health quality of life (Path D). Age (Path E), sex (Path F) and geographic location (Path G) had a significant direct effect on the biological variable. Age had a significant association with lower scores in the OHIP-14, indicating better oral health quality of life (Path J). There were five additional pathways in the final model. The worse functional status was associated with higher scores in the OHIP-14, indicating worse oral health quality of life. The correlation between OHIP-5:Self-conscious and OHIP-6: Tension was significant and of high magnitude. The worse symptom status was associated with poor oral health perception. The correlation between symptom status and oral health quality of life was significant and of moderated magnitude. Sex had a significant association with functional status. There was an indirect effect of sex on OHRQoL via functional status (0.25x0.49=0.12). The final model showed adequate fit (Final Model in Table 1).

DISCUSSION

This is one of the first studies that tested the Wilson and Cleary's model in oral health. The final model presented a good fit, and the hypothesis that demographic variables (sex and age) would be related to biological variable and to oral health-related quality of life, was confirmed. Age and sex had a direct effect on the biological variable and on oral health-related quality of life. There was an indirect effect of sex on oral health-related quality of life via functional status, but not through health perception (closed pathway).

Most SEM studies testing Wilson and Cleary's model presented acceptable fit indexes[5, 6, 12, 20-24]; therefore the validity of models has to concentrate on the plausibility associations and the direct and indirect effects of the variables. In our study, most distal

(exogenous) variables had no indirect effect because the last pathway (from general health perceptions to quality of life) was closed (small and not significant effect). Three studies showed a significant direct effect between health perceptions and quality of life[12,21-22], but other two did not found a relationship between those variables.[6, 23] One explanation is lack of comparability, but the mix of results may point to lack of robustness of the model as well.

In our final model, the biological variable was measured as edentulism and had no direct or indirect effect on OHRQoL. Also, other studies that tested Wilson and Clear model also found an association between the biological and symptom levels.[5, 24] On the other hand, it was associated with symptom status (satisfaction with appearance) in the present study. Hugo et al. also found that edentulous subjects rated their dental appearance good more frequently than dentate subjects;[25] maybe because older persons believe that tooth extraction and full mouth extraction are procedures to eliminate and prevent toothache. Furthermore, the influence of fatalistic beliefs about the inevitable loss of teeth with age may negatively influence the acceptance of the consequences of tooth loss as detrimental to health, and any intervention to retain teeth may simply be perceived as ineffective.[26]

There were additional pathways in the final model regarding age-biological variable and age-OHRQoL. Age was associated (direct or indirectly) with measures of quality of life in some studies[5, 12, 24], but not in another.[23] Our result is in agreement with some previous investigations where aged subjects were more prone to have fewer teeth.[25, 27] Also, participants aged 68+ had lower OHIP-14 scores indicating better OHRQoL. This result is in agreement with the findings reported by Jain et al.[28], that the impact of oral health problems on the quality of life reduces with the increase of age.[28] The older people evaluated in this study lived in a period in which edentulism and poor oral health seemed to have been considered a part of 'normal' ageing.[8,29]

In addition, there were two direct effects of sex on biological variable and on functional status. Female gender was associated with edentulism and with poor functional status, confirming previous findings from the literature.[25, 26] Female subjects lose more teeth because they are more sensitive to their dental needs, experiencing more tooth loss from intervention and services.[25] This result is in accordance with the literature from a qualitative study suggesting that older women may be more vulnerable to tooth loss as a result of norms and beliefs.[26] In this study, there was an indirect effect of sex on OHRQoL via functional status (0.25x0.49=0.12). This suggests that women had worse OHRQoL because they had poor functional status, that is, had to change the type and/or amount of food. Additionally, there was a direct effect of sex on OHRQoL. This finding is supported by a study that showed that OHRQoL was poorer in women than in men.[30] This is the first study to test the pathways hypothesized within Wilson and Cleary's model of patient outcomes in relation to OHRQoL. This study showed the importance of the variable sex on OHRQoL. This can help in assessing and modifying theoretical models and has great potential for further theory development.

Limitations of the present study include the generalizability of the results mainly because of the homogenous characteristics of the sample. Moreover, the Wilson and Cleary's model is a conceptual model, sometimes difficult to operationalize. Choosing the correct measurements has important theoretical and practical implications. Currently, there are no standardized measurements at each level/concept. For example, one study measured symptom status using the Xerostomia Inventory,[6] other as chewing difficulty, eating impact and perceptions of symptoms of dry mouth,[4] another using the Sign and Symptom Checklist for Persons with HIV,[21] and another as a combination of seven subscales of BSHS-N and SF-36.[23]

In conclusion, the present study demonstrates that there are direct and mediated pathways between clinical and nonclinical variables in relation to OHRQoL in community-

dwelling older people. The findings partially support Wilson and Cleary's model framework, as some pathways were confirmed but other were closed. Future research should explore sociodemographic characteristics of the individual and the environment, as well as evaluate appropriate measures for each level/concept.

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Model 1: Wilson and Cleary's model.
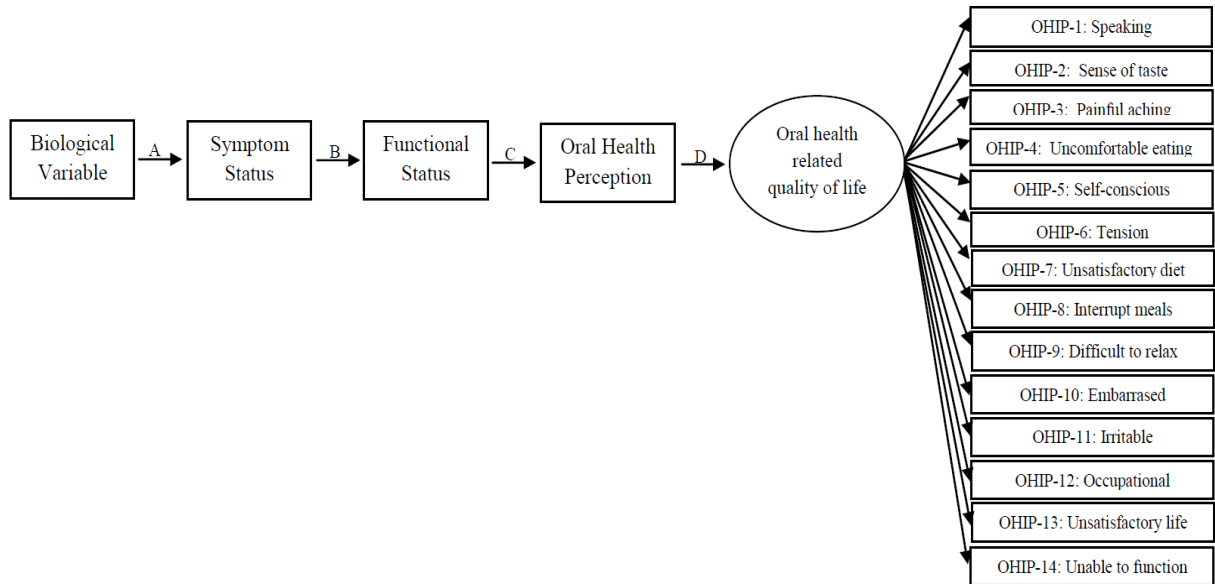
Model 2: Wilson and Cleary's model plus the demographic and socioeconomic variables.
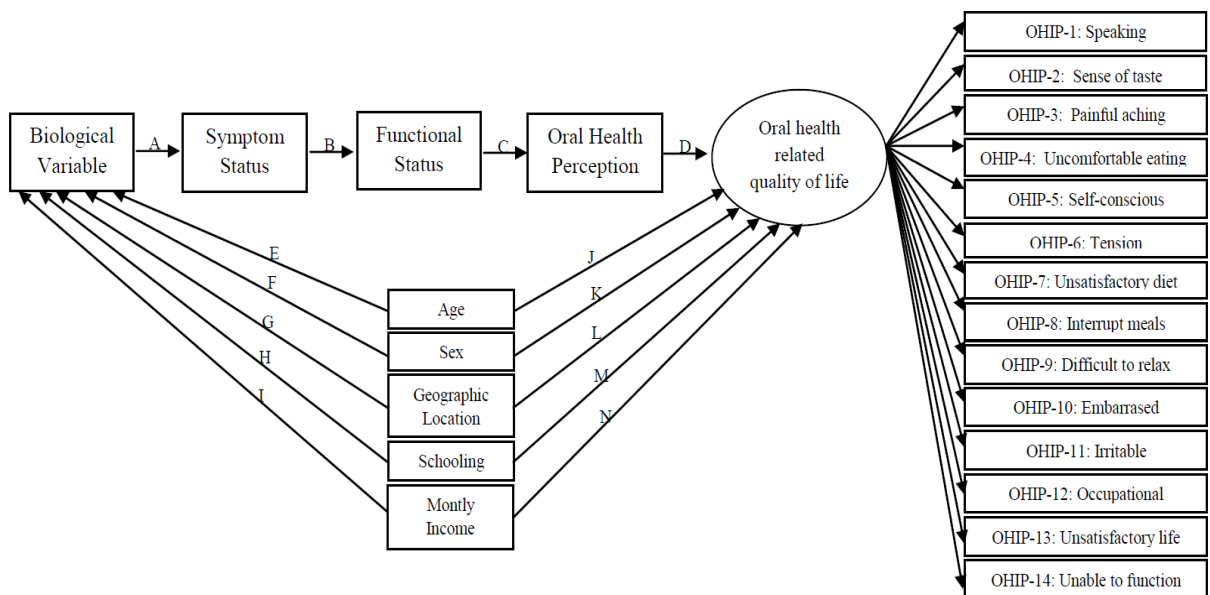

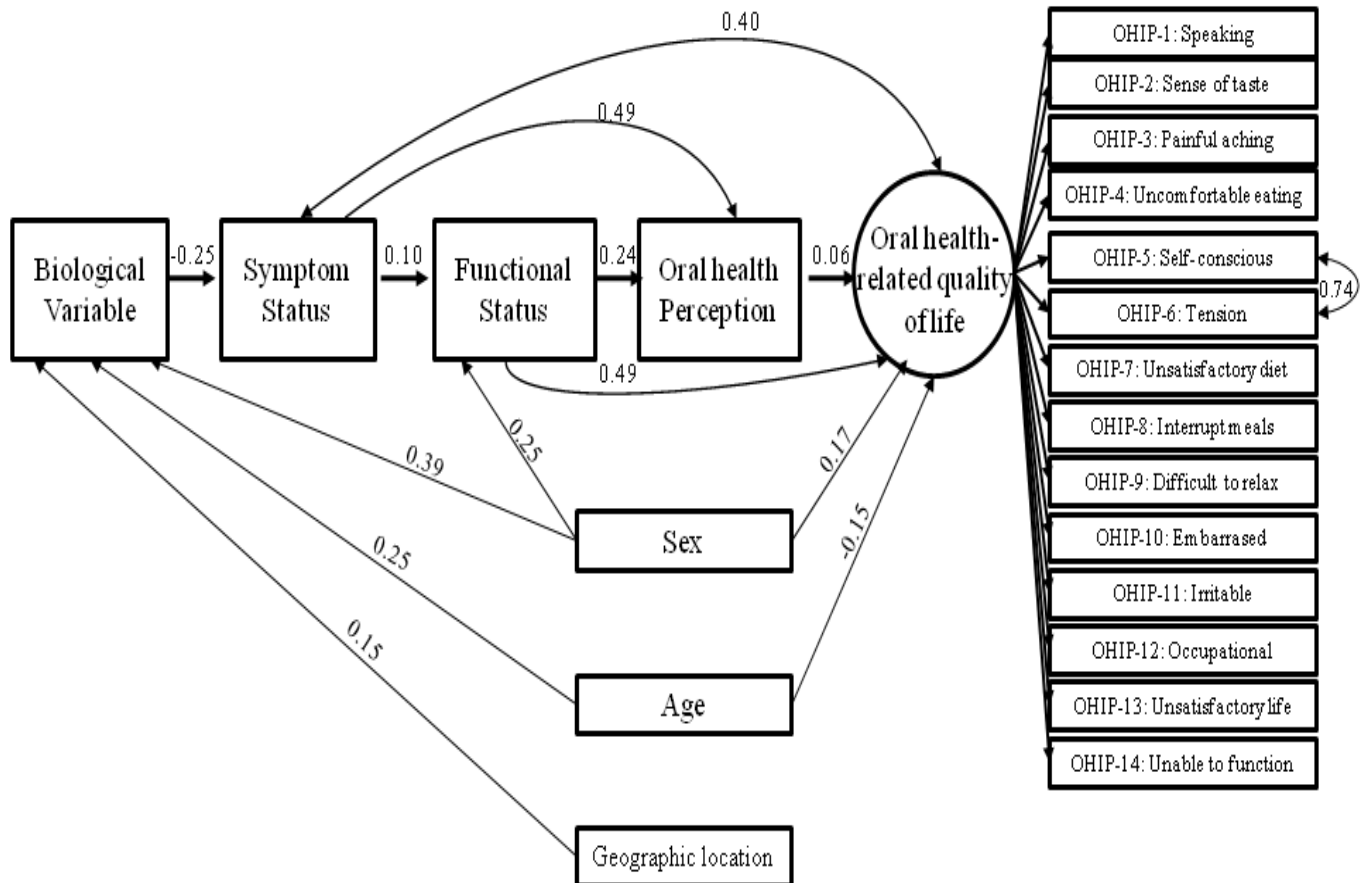Figure 1. Conceptual models adapted from Wilson and Cleary's model.

Figure 2. Final Model.

Table 1. Standardized coefficients of direct, indirect and total effect, and fit indices of the structural equation models.

Pathway	Model 1	Model 2	Final Model
Direct effect			
A: Biological variable →Symptom status	-0.04	-0.10	-0.25*
B: Symptom status →Functional status	0.62*	0.58*	0.10
C: Functional status → Oral health perception	0.86*	0.86*	0.24*
D: Oral health perception → Oral health quality of life	0.52*	0.49*	0.06
E: Age → Biological variable		0.24*	0.25*
F: Sex → Biological variable		0.40*	0.39*
G: Geographic location → Biological variable		0.14*	0.15*
H: Schooling → Biological variable		-0.10	
I: Monthly income → Biological variable		-0.07	
J: Age → Oral health quality of life		-0.15*	-0.15*
K: Sex → Oral health quality of life		0.17*	0.17*
L: Geographic location → Oral health quality of life		-0.08	
M: Schooling → Oral health quality of life		0.00	
N: Monthly income → Oral health quality of life		0.02	
Indirect and total effects of distal variables			
Age → Oral health quality of life			
Indirect			0.00
Total			-0.15*
Sex → Oral health quality of life			
Indirect			-0.01
Total			0.16*
Geographic location → Oral health quality of life			
Indirect			0.00
Total			-0.08
Schooling → Oral health quality of life			
Indirect		0.00	
Total		0.00	
Monthly income → Oral health quality of life			
Indirect		0.00	
Total		0.02	
Modification Indices			
Functional status → Oral health quality of life			0.49*
OHIP-5:Self-conscious↔OHIP-6:Tension			0.74*
Symptom status → Oral health perception			0.49*
Symptom status↔ Oral health quality of life			0.40*
Sex → Functional status			0.25*
Fit Indices			
CFI	0.96	0.95	0.98
TLI	0.95	0.94	0.98
RMSEA	0.06	0.05	0.03
WRMR	1.34	1.24	0.90

*p<0.05, Model 1: Wilson and Cleary's model. Model 2: Wilson and Cleary's model plus the demographic and socioeconomic variables.
Final Model: parsimonious model.

CONSIDERAÇÕES FINAIS

A percepção de qualidade de vida é um conceito multidimensional que reflete a experiência subjetiva dos indivíduos sobre o seu bem-estar funcional, social e psicológico. O presente estudo foi desenvolvido para comparar as dimensões do WHOQOL-Bref e do OHIP-14, avaliar a dimensionalidade e testar um modelo conceitual de qualidade de vida relacionada à saúde bucal utilizando a escala Oral Health Impact Profile-14 (OHIP-14).

Um dos objetivos da tese foi investigar se existe convergência entre as dimensões da versão abreviada do questionário da Organização Mundial da Saúde sobre Qualidade de Vida (WHOQOL-Bref) e do questionário Perfil do Impacto de Saúde Bucal-14 (OHIP-14). O presente estudo demonstrou que todas as correlações analisadas entre os domínios do WHOQOL (físico) e do OHIP (limitação funcional, dor física, limitação física e desvantagem) apresentaram associação positiva de baixa magnitude. Apesar dos questionários WHOQOL-Bref e OHIP-14 apresentarem dimensões relacionadas, eles medem conceitualmente as relações físicas, sociais e psicológicas de maneira diferente. O WHOQOL-Bref é um instrumento genérico de qualidade de vida, ou seja, não direcionado para avaliar as dimensões afetadas por um problema de saúde específico. O OHIP-14 é focado na experiência negativa e na incapacidade funcional.

Todos os itens e os domínios dos indicadores de qualidade de vida relacionada à saúde bucal são fundamentados em modelos teóricos, mas o número de itens e a natureza das dimensões variam entre os diferentes instrumentos. A escala OHIP possui originalmente sete domínios: limitação funcional, dor física, desconforto psicológico, incapacidade física, incapacidade psicológica, incapacidade social e desvantagem social. No entanto os resultados sugerem que o OHIP-14 é uma escala unidimensional.

Considerando a importância de uma escala de aferição de qualidade de vida relacionada à saúde bucal, é fundamental que ela seja acompanhada de avaliações críticas de sua validade dimensional. Este estudo demonstrou que, embora a qualidade de vida relacionada à saúde bucal possa ser um conceito multidimensional, o OHIP-14 não captura várias dimensões. Vale ressaltar a importância da questão dimensional, pois essa estrutura indica a forma como a escala deve ser concretamente operacionalizada. A utilização de um escore único somente se justifica se uma escala é verdadeiramente unidimensional. Caso contrário, usar dimensões separadas pode ser a melhor forma de acomodar diferentes fatores de um construto. Além disso, diferentes formas de operacionalização da escala OHIP-14 (escala unidimensional ou com as sete dimensões originais) implicam em diferentes resultados que podem dificultar as comparações entre os estudos.

Este é o primeiro estudo que testou um modelo conceitual de qualidade de vida relacionada à saúde bucal em idosos. Neste trabalho, a modelagem utilizada possibilitou avaliar os caminhos causais hipotetizados. Mais do que olhar para o efeito das variáveis explicativas sobre o desfecho, buscou-se olhar o caminho causal. Foi possível identificar um efeito direto da idade e do sexo, bem como um efeito indireto do sexo através do estado funcional do indivíduo na qualidade de vida relacionada à saúde bucal. O modelo original de Wilson e Cleary não inclui fatores como sexo, idade e presença de dentes naturais, mas nossos resultados sugerem que, para idosos brasileiros, tais variáveis desempenham um papel importante para o entendimento conceitual de qualidade de vida relacionada à saúde bucal.

O OHIP-14 pode representar uma ferramenta útil no planejamento e avaliação do impacto de políticas públicas de saúde, na avaliação dos resultados de programas de saúde bucal e na identificação de necessidades e fatores de risco à qualidade de vida relacionada à saúde bucal.

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ANEXO A – Escala OHIP-14

Questão	Nunca	Quase Nunca	Ocasionalmente	Algumas vezes	Sempre
1-Você teve problema para pronunciar alguma palavra por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4
2-Você sentiu que sua capacidade de sentir o gosto dos alimentos piorou por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4
3-Você teve alguma dor em sua boca?	0	1	2	3	4
4-Você sentiu desconforto para comer alguma comida por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4
5-Você se sentiu preocupado por causa de seus dentes, boca ou dentadura?	0	1	2	3	4
6-Você se sentiu tenso por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4
7-Sua alimentação foi insatisfatória por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4
8-Você interrompeu suas refeições por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4
9-Você sentiu dificuldades para relaxar por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4
10-Você ficou envergonhado por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4
11-Você ficou irritado com outras pessoas por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4
12-Você sentiu dificuldade em realizar suas atividades habituais por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4
13-Você sentiu, no geral, que a vida é menos satisfatória por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4
14-Você esteve totalmente incapaz de realizar suas atividades por causa de problemas em seus dentes, boca ou dentadura?	0	1	2	3	4

Questões 1 e 2 dimensão: limitação funcional, questões 3 e 4 dimensão: dor física, questões 5 e 6 dimensão: desconforto psicológico, questões 7 e 8 dimensão: incapacidade física, questões 9 e 10 dimensão: incapacidade psicológica, questões 11 e 12 dimensão: incapacidade social, questões 13 e 14 dimensão: desvantagem.

ANEXO B – Questionário WHOQOL-Bref

		Muito ruim	Ruim	Nem ruim nem boa	Boa	Muito boa
1	Como você avaliaria sua qualidade de vida	1	2	3	4	5

		Muito insatisfeito	Insatisfeito	Nem satisfeito nem insatisfeito	Satisfeito	Muito satifeito
2	Quão satisfeito(a) você está com a sua saúde?	1	2	3	4	5

As questões seguintes são sobre o quanto você tem sentido algumas coisas nas últimas duas semanas.

		Nada	Muito pouco	Mais ou menos	Bastante	Extremamente
3	Em que medida você acha que sua dor (física) impede você de fazer o que você precisa?	1	2	3	4	5
4	O quanto você precisa de algum tratamento médico para levar sua vida diária?	1	2	3	4	5
5	O quanto você aproveita a vida?	1	2	3	4	5

		Nada	Muito pouco	Médio	Muito	Completamente
6	Em que medida você acha que a sua vida tem sentido?	1	2	3	4	5
7	O quanto você consegue se concentrar?	1	2	3	4	5
8	Quão seguro(a) você se sente em sua vida diária?	1	2	3	4	5
9	Quão saudável é o seu ambiente físico (clima, barulho, poluição, atrativos)?	1	2	3	4	5

As questões seguintes perguntam sobre quão completamente você tem sentido ou é capaz de fazer certas coisas nestas últimas duas semanas.

		Nada	Muito pouco	Médio	Muito	Completamente
10	Você tem energia suficiente para seu dia-a-dia?	1	2	3	4	5
11	Você é capaz de aceitar sua aparência física?	1	2	3	4	5
12	Você tem dinheiro suficiente para satisfazer suas necessidades?	1	2	3	4	5
13	Quão disponíveis para você estão as informações que precisa no seu dia-	1	2	3	4	5

	a-dia?					
14	Em que medida você tem oportunidades de atividade de lazer?	1	2	3	4	5

As questões seguintes perguntam sobre quão bem ou satisfeito você se sentiu a respeito de vários aspectos de sua vida nas últimas duas semanas.

		Muito ruim	Ruim	Nem ruim nem bom	Bom	Muito bom
15	Quão bem você é capaz de se locomover?	1	2	3	4	5

		Muito insatisfeito	Insatisfeito	Nem satisfeito nem insatisfeito	Satisfeito	Muito satisfeito
16	Quão satisfeito(a) você está com o seu sono?	1	2	3	4	5
17	Quão satisfeito(a) você está com sua capacidade de desempenhar as atividades do seu dia-a-dia?	1	2	3	4	5
18	Quão satisfeito(a) você está com sua capacidade para o trabalho?	1	2	3	4	5
19	Quão satisfeito(a) você está consigo	1	2	3	4	5

	mesmo?				
20	Quão satisfeito(a) você está com suas relações pessoais (amigos, parentes, conhecidos, colegas)?	1	2	3	4	5
21	Quão satisfeito(a) você está com sua vida sexual?	1	2	3	4	5
22	Quão satisfeito(a) você está com o apoio que você recebe de seus amigos?	1	2	3	4	5
23	Quão satisfeito(a) você está com as condições do local onde mora?	1	2	3	4	5
24	Quão satisfeito(a) você está com o seu acesso aos serviços de saúde?	1	2	3	4	5
25	Quão satisfeito(a) você está com o seu meio de transporte?	1	2	3	4	5

A questão seguinte refere-se a com que freqüência você sentiu ou experimentou certas coisas nas últimas duas semanas.

		Nunca	Algumas vezes	Frequentemente	Muito Frequentemente	Sempre
26	Com que freqüência você tem sentimentos negativos tais como mau humor, desespero, ansiedade,depressão?	1	2	3	4	5

ANEXO C – APROVAÇÃO DO MANUSCRITO I

REVISTA BRASILEIRA DE EPIDEMIOLOGIA
BRAZILIAN JOURNAL OF EPIDEMIOLOGY

Ref.: 1033-12

São Paulo, 16 de fevereiro de 2012.

Ilma. Sr.ª
Camila Mello dos Santos
Faculdade de Odontologia, Universidade Federal do Rio Grande do Sul
Departamento de Odontologia Preventiva e Social

Ref.: RBEPID-972

Prezada Colaboradora,

Viemos comunicar a V.Sa. o resultado da apreciação da versão do trabalho de sua autoria, intitulado "Comparison of two assessment instruments of the quality of life in older adults".

O Conselho de Editores aprovou **o artigo.**

Agradecendo a valiosa atenção e colaboração, despedimo-nos.

Atenciosamente,

Márcia Furquim de Almeida

Editora Científica

ANEXO D – APROVAÇÃO DO MANUSCRITO II

Rio de Janeiro, 30 de novembro de 2012.

Ilma Sra.
Dra. Camila Mello dos Santos:

Em nome do Conselho Editorial de **Cadernos de Saúde Pública**, comunicamos que o artigo de sua autoria, em colaboração Branca Heloisa de Oliveira, Paulo Nadanovsky, Juliana Balbinot Hilgert, Roger Keller Celeste & Fernando Neves Hugo, intitulado *"Oral Health Impact Profile-14: a Unidimensional Scale?"* foi aprovado quanto ao seu mérito científico.

A conclusão do processo editorial de seu artigo dependerá da avaliação técnico-editorial com vistas a detectar dúvidas de formatação, referências bibliográficas, figuras e/ou tabelas. Comunicação nesse sentido lhe será enviada oportunamente.

Atenciosamente,

Marilia Sá Carvalho
Editora

Claudia Travassos
Editora

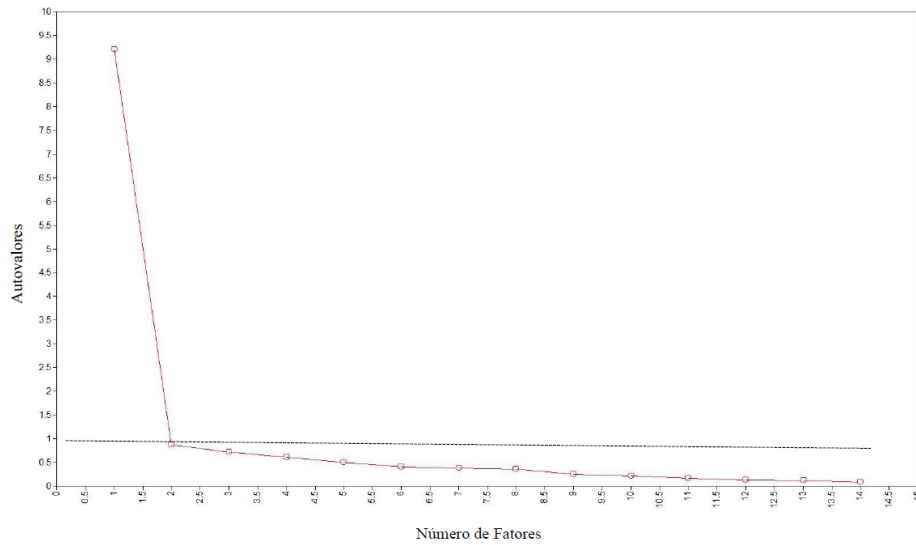Claudia Medina Coeli
Editora

APÊNDICE A- GRÁFICOS

Figura1. Gráfico do autovalor para o critério do scree-plot Estudo do Rio de Janeiro.
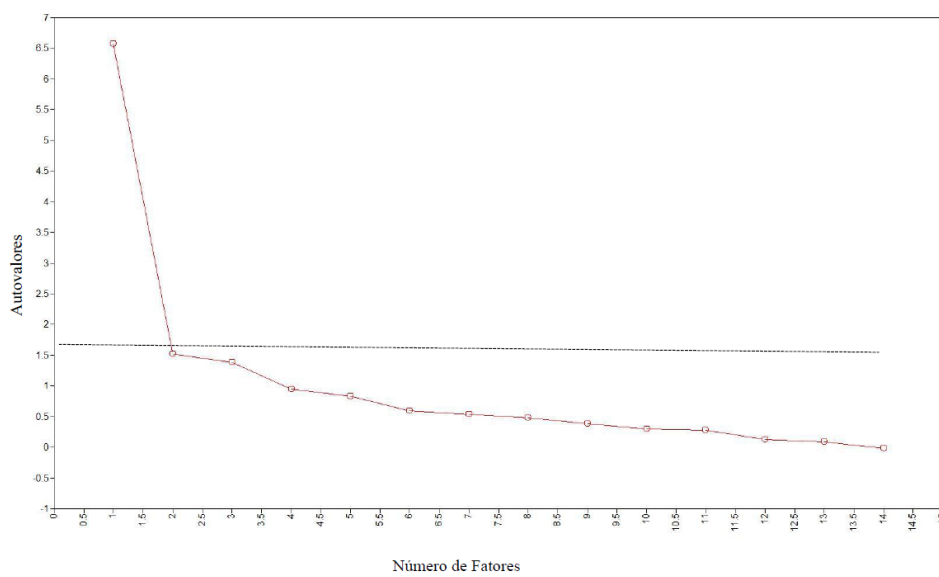

Figura2. Gráfico do autovalor para o critério do scree-plot Estudo de Carlos Barbosa.