

# Priority of Prosthodontic Need Assessment: Functional vs Other Quality of Life Needs – A Quality of Life Assessment Using APS-ARG QOL(DS) – A Pilot Project

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## ABSTRACT

**Objective:** Restoration of functional ability is the topmost priority on the mind of a prosthodontist, however, functional restoration alone does not fulfil the treatment needs of a patient.

**Material & Method:** A 20-item scale for understanding quality of life related to prosthodontic treatment needs was tested for internal consistency and usefulness in understanding the priorities of treatment needs of patients. The scale was administered to 30 patients, mostly in the elderly age group (Mean age  $59.43 \pm 10.28$  years) seeking prosthodontic rehabilitation at Chandra Dental College and Hospital, Barabanki (U.P.), India. On testing the internal consistency of the scale, it was found to be reliable (Cronbach alpha 0.711).

**Result:** Though functional needs emerged as the topmost priority for patients yet emotional needs were found to be as much important while social needs and financial needs occupied the lower tiers on the hierarchy of treatment needs. The differences in relative importance of different dimensions were well explained and were found to be logical.

**Conclusion:** The scale was found to be a useful utility in quantification of prosthodontic need and in order to understand the prosthodontic need beyond considerations of fulfilment of functional disability alone.

**Keywords:** Quality of life (Dental Subscale), Internal consistency, Priority of Prosthodontic treatment needs

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## INTRODUCTION

Deciding the priorities while planning a treatment strategy is very important for a successful treatment endeavour. Attempts have been made to understand the extent of functional disability and to decide the treatment strategy using some indices such as Treatment Priority Index (TPI) (1,2). There is ample evidence that patients want health care professionals to ask about their physical and emotional needs. However, current assessment often takes place in an unsystematic manner and professionals

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frequently do not capture accurately what patients are trying to tell them (3).

Patient needs are versatile, they are not limited to the functional aspect of the problem. With the growing urge to achieve perfection, the interest in the measurement of health-related quality of life (HRQOL) has increased considerably in recent years. Disease-specific and generic (non-disease specific) measures are increasingly applied in different research contexts. Existing measures are being developed further and new ones created in a search for 'better' instruments. However, at least as far as generic measures are concerned, none of the measures and approaches developed so far can claim to have established a position as the measure, either as a standardised system of describing health states or as a method of valuing them (4).

Health professionals who provide a treatment argue that they 'assess' patients in the communication that occurs during treatment. However, research indicates that health professionals do not accurately perceive the extent of problems suffered by the individual patient, particularly less 'visible' problems (5) such as the social, financial and psychological issues involved. This may partly be explained by evidence which suggests that communication with patient is characterised by avoidance of patients' expression of their concerns and poor appreciation of patients' needs (6).

Prosthetic needs of a patients are not just limited to fulfilment of functional needs, rather they are as much related with the social needs, psychological needs as well as the financial needs of a patient. In fact, prosthetic restoration is one of the primary objectives of a prosthodontist apart from addressing the functional aspect. The prosthetic needs vary from an individual to individual. The success of a treatment strategy lies in identification of the patient's needs and then customizing the treatment plan to fulfil those needs.

Health related quality of life has been considered to be an emerging trend to understand the patient needs in more than one

way and to offer him the appropriate solution at one center itself. It is a multidimensional concept that captures people's perceptions about factors that are important in their everyday lives (7).

The present study tries to explore the treatment needs of patients coming for prosthodontic rehabilitation in our set up and to understand the priority of treatment needs in more than one dimension. The present study attempts to work on a scale developed to measure different dimensions of quality of life related with dental treatment developed by APS-Active Research Group as QOL-Dental Subscale [APS-ARG QOL(DS)].

### OBJECTIVES

- To check the reliability (internal consistency) of the APS-QOL (DS) scale for assessment of treatment needs.
- To determine a hierarchy of individual priorities in treatment needs, based on the levels of dimensions of APS-QOL dental subscale.

### MATERIAL AND METHOD

A total of 30 patients (21 males and 9 females) aged between 40 to 80 years (Mean  $59.43 \pm 10.28$  years) of age coming for prosthodontic rehabilitation to Chandra Dental College and Hospital, Safedabad, Barabanki (U.P.), India were enrolled in this observational study. Most of the patients received complete denture rehabilitation (27/30) while 3 patients (10%) received partial rehabilitation.

### Data Collection

Data related to treatment needs of the patients was collected using APS-ARG Quality of Life (Dental Subscale). The scale was administered using an interview method. This scale has been developed to measure the quality of life related with prosthodontic health in order to enable the dentists understand the treatment needs of the patients. The post-treatment administration of the scale gives the dentist an opportunity to understand how far he has been successful on different aspects of Quality of Life related to his treatment. At the same time it brings about the short-

comings/gaps that treatment fails to fulfill. However, in the present assessment only the pre-treatment needs of the patients have been studied.

The APS-ARG quality of life (Dental Subscale) [APS-ARG QOL(DS)] has four dimensions to measure functional, social, emotional/psychological and financial quality of life related to dental treatment (8).

### Development of the Scale

The scale was developed after a brainstorming session of APS-ARG experts and a team of dentists. The questions were framed after a panel discussion. The scale was developed on the pre-identified dimensions of quality of life such as functional, social, psychological and financial dimensions. Each aspect of quality of life has been addressed with the help of five items on Likert (9) Scale. For each item five probable answers have been provided which range from strongest effect on quality of life (score 4) to no effect on quality of life (score 0). A cut-off of 3 indicates that the patient's quality of life is negatively affected for that particular item. For each dimension, the cut-off has been taken as 15 (max. 20) while for the total scale, the cut-off 60 indicates strong bearing on the quality of life.

### Structure of the APS-ARG QOL Scale

The scale has been divided into four dimensions, each addressing a particular aspect of quality of life. The detailed description of each part of the scale is as follows:

- 1. Functional:** The functional quality of life aspect addresses the functional needs of the patient related to the dental ailment. It analyzes the ability of a patient to perform all the functions related to the use of teeth. It has got five items, which are intended to bring about the following information:
  - 1.1. Ability to take all kind of food
  - 1.2. Ability to speak some particular words/phonetics
  - 1.3. Ability to speak some specific food-stuff
  - 1.4. Ability to clean teeth/prosthesis properly

- 1.5. Ability to use opposing tooth effectively.
2. **Social:** The APS-ARG QOL (DS)'s second section is intended to assess the issues related to effect of dental ailment on the social quality of life of an individual. The five items under this section are as follows :
- 2.1. Unwanted attention towards missing tooth.
  - 2.2. Reduction in participation in social gatherings
  - 2.3. Avoidance by spouse/partner
  - 2.4. Recommendations to visit a dentist
  - 2.5. Social contacts cutting jokes.
3. **Emotional:** When the functional and social life of an individual is affected it has obvious impact on the psychology; APS-ARG QOL (DS) incorporates five items to address the emotional quality of life related with dental ailment. The five items are as follows:
- 3.1. Feeling of ugliness
  - 3.2. Covering mouth with hand/

- handkerchief
- 3.3. Loss of confidence
  - 3.4. Continuous thinking about dental problem
  - 3.5. Fear of hurting gums
4. **Financial:** A physical ailment is accompanied with financial issues too. The cost of treatment, loss of work owing to treatment schedule, costs to make visits to a dentist, *etc.* contribute to financial quality of life. APS-ARG QOL (DS) interprets the financial quality of life through the help of following five items:
- 4.1. Expenditure on dental prosthesis
  - 4.2. Costs of visits to a dentist
  - 4.3. Costs of taking special diet
  - 4.4. Cost of oral care and dental hygiene
  - 4.5. Cost of loss of occupational commitments
- The sum of all the scores obtained on APS-ARG QOL (DS) provides the information regarding the severity of the problem re-

lated to quality of life as encountered by the patient. The interpretation of scores is as follows :

Total Score range	Inference
0 – 20	Quality of life severely affected
21-40	Quality of life affected to a certain extent
41-60	Quality of life affected to a limited extent
>60	No serious impact on quality of life

For different sections, the interpretations of scores are as follows:

Section Score range	Inference
0 – 5	Quality of life severely affected
6-10	Quality of life affected to a certain extent
11-15	Quality of life affected to a limited extent
>15	No serious impact on quality of life

**Table 1: Item Total Statistics and internal consistency of Scale**

Items	Scale Mean if item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
<b>Dimension 1: Functional</b>				
Ability to take all kind of food	41.93	60.202	-.071	.717
Ability to speak some particular words/phonetics	42.10	52.576	.373	.690
Ability to speak some specific foodstuff	42.93	58.547	.009	.727
Ability to clean teeth/prosthesis properly	40.23	57.771	.213	.706
Ability to use opposing tooth effectively.	43.97	59.482	.148	.711
<b>Dimension 2: Social</b>				
Unwanted attention towards missing tooth.	41.97	55.689	.168	.712
Reduction in participation in social gatherings	41.73	50.409	.385	.688
Avoidance by spouse/partner	40.23	57.840	.158	.709
Recommendations to visit a dentist	42.30	53.528	.375	.691
Social contacts cutting jokes.	41.50	49.362	.457	.679
<b>Dimension 3: Financial</b>				
Expenditure on dental prosthesis	41.50	60.259	-.074	.719
Costs of visits to a dentist	40.73	57.030	.141	.712
Costs of taking special diet	40.77	58.323	.039	.722
Cost of oral care and dental hygiene	40.43	57.426	.199	.706
Cost of loss of occupational commitments	42.30	52.079	.461	.682
<b>Dimension 4: Emotional</b>				
Feeling of ugliness	42.83	54.213	.508	.686
Covering mouth with hand/handkerchief	41.43	48.116	.530	.669
Loss of confidence	42.23	51.220	.412	.685
Continuous thinking about dental problem	42.37	50.240	.545	.672
Fear of hurting the gums	42.50	53.914	.295	.698
<b>OVERALL</b>	<b>Mean 44.00±7.74 (SD); Cronbach alpha = 0.711</b>			

**Table 2: Dimensionwise Mean Scores**

SN	Dimension	Max score	Percentile values			Mean Score	SD	Significance of difference from functional needs		
			25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>			Mean Diff±SD	“t”	“p”
1.	Functional	20	7.75	9.00	10.00	8.83	1.80	–	–	–
2.	Social	20	9.75	12.00	15.00	12.27	3.43	3.43±3.36	5.597	<0.001
3.	Financial	20	13.00	14.50	15.00	14.27	2.07	5.43±2.51	11.835	<0.001
4.	Emotional	20	6.00	8.50	10.25	8.63	3.71	0.20±3.79	0.289	0.775

APS-QOL (DS) could be administered after treatment too in order to get the information about treatment effect and treatment gaps. This is done by calculating the difference between pre-treatment and post-treatment scores on each dimension of the quality of life. However, in present assessment only pre-treatment patient needs have been taken into consideration.

**Statistical Analysis**

The scale was tested for internal consistency by calculating Cronbach’s alpha value. The inter-dimension differences were calculated using paired “t”-test. The confidence level of the study was kept at 95% hence a “p” value less than 0.05 indicated a statistically significant difference.

**RESULTS**

Table 1 shows the Item Total statistics and internal consistency of the scale. The Cronbach alpha value obtained for the scale was 0.711. The maximum increment on deleting an item from the scale was 0.011 which hardly brought about a qualitative change in the scale and hence the scale was acceptable in its present form. The mean total score of the scale was found to be 44.00±7.74, thus reflecting that the quality of life of subjects was affected to a limited extent (Table 1).

Dimensionwise maximum scores were obtained for financial dimension (14.27±2.07). Thus implying that for this aspect the quality of life of subjects was affected only to a limited extent. Minimum scores were obtained for Emotional dimension (8.63±3.71) which implied that quality of life related to emotional aspect was affected upto a certain extent. No mean scores were reflective of severe affect on the

quality of life. The mean scores related to functional aspect (8.83±1.80) were very close to Emotional aspect (8.63±3.71) and both can be interpreted as quality of life affected to a certain extent. The mean scores of social (12.27±3.43) were in the category of quality of life affected to a limited extent (Table 1).

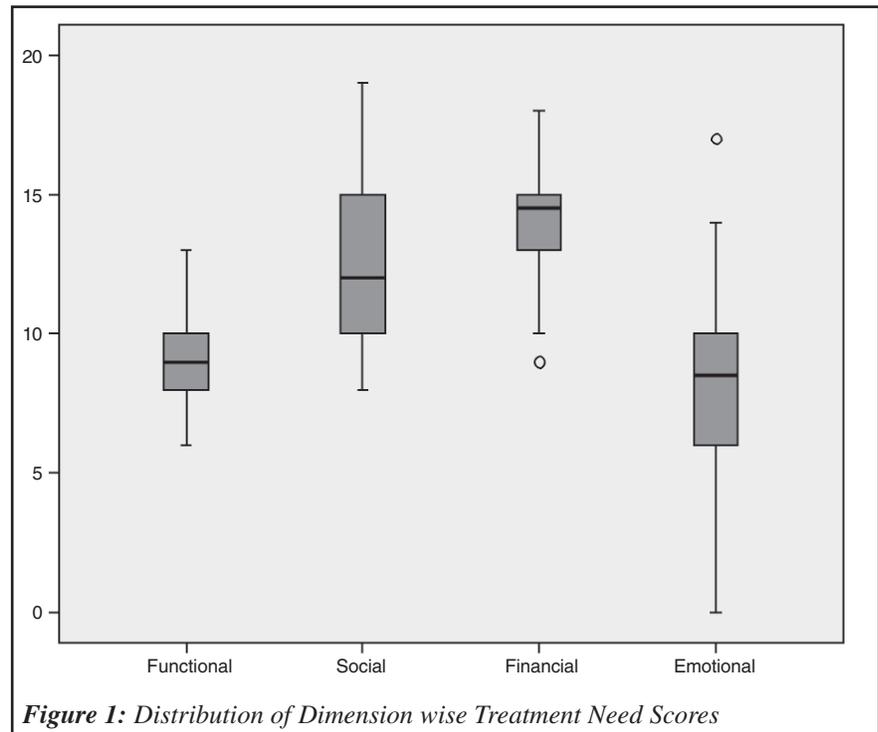
Comparison of different dimensional needs with functional needs showed no statistically significant difference between functional and emotional needs (p=0.775), however, as compared to functional needs, social and financial needs were found to be of significantly lower order (p<0.001) (Table 2; Fig. 1 and 2).

**DISCUSSION**

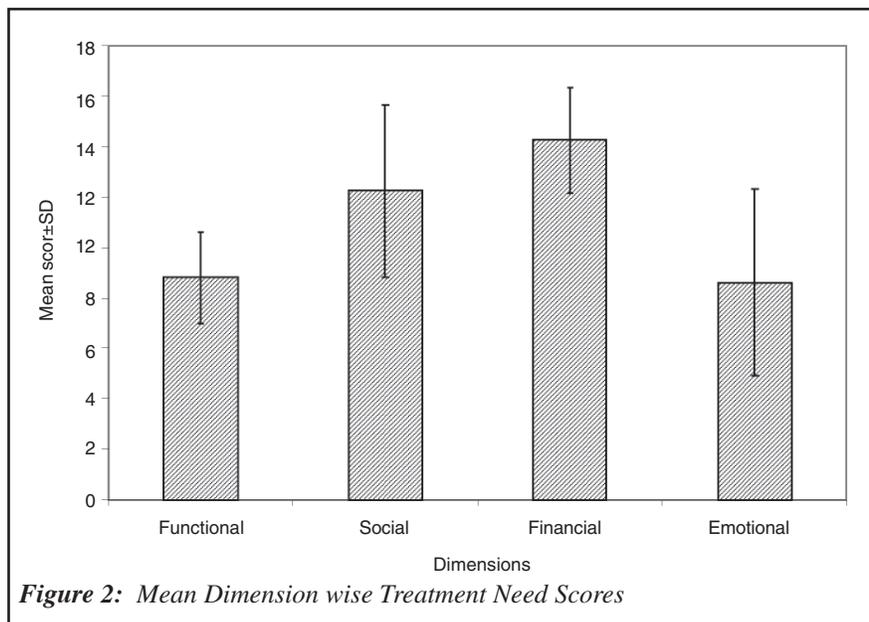
The internal consistency of this 20-item

scale as assessed by Cronbach alpha coefficient was found to be 0.711 which is well above the generally agreed upon criteria of 0.7 (10). Though deletion of some items might have ensured a better quantitative internal consistency (maximum 0.011), however, qualitatively it was not considered to be significant as each item in the scale had a unique representation of the characteristic being addressed.

The scale was able to differentiate and distinguish among different dimensions of the treatment needs. In present study most of the patients were edentulous and hence functional needs were more pronounced. For item no. 5 of functional dimension *i.e.* ability to use opposing tooth effectively, almost all the patients scored 0. However, from social dimensional point of view the



**Figure 1: Distribution of Dimension wise Treatment Need Scores**



scores of subjects were quite high and do not reflect an imminent situation to intervene. As majority of subjects were in elderly age group, the social circle of individuals was limited and their social needs did not depend on prosthetic appearance. For item no. 3 on social dimension *i.e.* avoidance by spouse/partner, majority of respondents had very high scores. This implied that in elderly age-group there is a strong bond between partners which is not dependent on physical appearance rather it is dependent on the qualitative assessment of person in a whole. The social needs were less pronounced and can be explained owing to difficulty in initiating new friendships and to belong to new networks and with increasing age people lose connection with their friendship networks (11).

In elderly age group, physical needs from opposite gender were limited or almost diminished and hence in this agegroup social needs related to attraction towards opposite gender were less pronounced. Kotwal (2009) have in their study on physical needs and adjustments made by the elderly have also reported that the physical needs and emotional functions diminish during the old age (12).

Maximum scores were obtained for financial dimension. This might be because the patients were being provided the rehabili-

tation without any charge. They did not have to make frequent visits. As majority of subjects were edentulous, they did not have to take special care in maintaining oral care and hygiene. Most of the respondents were not leading an active occupational life hence the scores on the item related to cost of loss of occupational commitments too was not much low.

As present study used a Likert scale for 4-dimensions (with 5-items each) with a variation of score of 1 for each item indicating a qualitative change, hence a difference of score of 5 between two dimensions is clinically significant. Thus from clinical point of view, the difference in financial and functional dimensions is significant.

In present study, apart from functional needs, emotional needs of patients were found to be quite high. Owing to physical dysfunction and low personal control adding to personal and status losses in growing age, the emotional needs of the elderly patients are more pronounced (13). These people are faced with numerous physical, emotional and social role changes that challenge their sense of self and capacity to live happily. Many people experience loneliness and depression in old age, either as a result of living alone or due to lack of close family ties and reduced connections with their culture of origin, which results in an in-

ability to actively participate in the community activities (11). It was interesting that people find edentulousness as one of the reasons behind this emotional need. The utility of the scale is multifold as it tries to quantify the otherwise subjective prosthodontic need and that too not just based on the functional needs only rather uses a comprehensive and holistic approach to understand the prosthodontic need as merely fulfilment of a functional disability. Apart from this, the scale can be used to evaluate the change in post-treatment change in quality of life of patients undergoing prosthodontic rehabilitation. The scale can also be used to quantitatively compare two or more prosthodontic treatment programmes.

Though the sample size of the study was 30 only, however, Yurdugül H *et al.* (2008) have shown that in a well-constructed model, the cronbach alpha value to measure internal consistency of a scale can be calculated for a sample as low as 30 (14). Although in future studies revalidation of internal consistency of scale is recommended before the internal consistency is validated on a larger sample size.

Through this assessment, it is suggested that to fulfil the multi-dimensional quality of life related needs of patients coming for prosthodontic rehabilitation in our set up, there is need of counselling staff to address the emotional needs of the patients so as to provide them all round satisfaction.

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