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Research Article

Perception of health related quality of life in healthy Indian adolescents

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ABSTRACT

Background: Adolescence is a time of mental and psychological adjustment. Adolescents also undergo several changes in their perception and behaviour. It is very important for us to evaluate the perception of quality of life among adolescents in order to ensure comprehensive health care. The objective of the study was to measure QOL in each domain namely physical, psychological, social relations and environment using WHO QOL-BREF questionnaire (26 items).
Methods: A cross-sectional study was performed at 2 schools involving 1051 healthy adolescents aged 10-19 years. The remaining 1051 children were given the WHO QOL-BREF questionnaire and the self-reported answers were rated as per the who module to identify the domain with lowest QOL in normal healthy adolescents.
Results: Out of 1051 enrolled children, 601 were males and 450 were females. The overall scores across each domain was as follows: Domain 1 - 23.57 (Physical), Domain 2 - 21.24 (Psychological), Domain 3 - 1.22 (Social relations) and Domain 4 -28.14 (Environment). The overall scores were highest in domain 4 (Environment) and lowest in domain 3 (Social relations). The difference in scores between all age groups was statistically significant (P<0.000) for Physical, Psychological and social domains.
Conclusions: In our study, the adolescents had good perception about their environment, leisurely activities, transport facilities and accessibility and quality of health care. Adolescents had poor perception about their social relations, personal relations and respect from others. There was no significant difference in perception of quality of life between males and females for any of the domains.

Keywords: Adolescents, Quality of life, Social Relations, WHO QoL-BREF

INTRODUCTION

Adolescent period is considered as a period of transition from childhood to adulthood. The second decade of life (10-19 years) is a period of rapid development, when young people acquire new capacities and are faced with many new situations that create not only opportunities for progress, but also risks to health and wellbeing. Adolescence is also a time of mental and psychological adjustment; a situation of being no longer a child, but not yet an adult either. The main change is the development of an integrated and internalized sense of identity. This means, to some degree, drawing away from other members of the family and developing more intense relationships with peers. Adolescents also undergo several changes in their perception and behaviour. It is very important for us to evaluate the perception of quality of life among adolescents in order to ensure that the health care provided would be comprehensive and meet the expectations of the adolescents.

Quality of life has been studied from two major perspectives: objective and subjective.[1] Objective measures focus on external, quantifiable conditions such as income levels, access to medical resources, and recreational opportunities. In contrast, subjective measures focus on internal evaluations of life circumstances (e.g., satisfaction, judgments, and emotions). Quality of life assessments have been used most widely in the area of malignancies, though now

their use has become common in a number of other diseases and conditions including diabetes, hypertension, patient with chronic diseases such as arthritis and bronchitis, mental illnesses, cerebrovascular disease, renal disease, head injury, and old age.[2-11]

Though most instruments used for assessing QOL were constructed in the developed countries of North America and Europe, simultaneous development in different cultures and languages has been suggested as an appropriate method for ensuring cross-cultural applicability.[12,13] WHO QOL-100 was the first instrument developed by WHO to measure the quality of individuals.[14] Later the instrument was revised and WHO QOL-BREF instrument was developed to measure QOL.[15] Studies have shown that this instrument is a reliable, valid and culturally appropriate for self-reporting of HR QoL in Indian adolescents.[16,17] The objective of the study was to measure QOL in each domain namely physical, psychological, social relations and environment using WHO QOL-BREF questionnaire (26 items) and to identify the domain with lowest QOL in normal healthy adolescents & suggest appropriate corrective measures.

METHODS

A cross-sectional study was performed between September 2010 to August 2012. The study was conducted at 2 schools (1 Government and 1 Private) and 1 Engineering college near Chennai, India. Consent was obtained from the respective institutional heads for conduct of the study. Normal Adolescents aged 10-19 years with no pre-existing medical/psychiatric illnesses were included in the study. Adolescents with systemic illnesses, chronic medications (anti convulsants, anti-psychotic drugs), known psychiatric/behavioural problems like Autism, ADHD and Adolescents with substance abuse (Alcohol/Smoking) were excluded in the study. The study was approved by the institutional ethics committee of Sri Ramachandra Medical College and Research Institute.

Participating schools were requested to provide the list of students enrolled in classes VI-XII. The students aged between 10-19 year were included in the study as this is the defined age of adolescents. An envelope containing a letter for parents describing the purpose of study; an informed consent form and a data sheet for socio demographic details was handed over through the children for their parents. Parents who agreed to their child's participation were required to sign and return the informed consent form and fill the socio demographic details as per the instructions in the covering letter. Adolescents, who brought back the signed consent form, underwent a detailed history and physical examination by the investigator.

The adolescents included in the study completed the HRQOL instrument at school in front of the investigator. Out of a total 1100 participating children, 49 children were excluded. 18 Asthmatics, 3 children with Epilepsy, 4 students with recent trauma/surgery, 3 children with heart diseases, 2 children with hypothyroidism, 2 children with Nephrotic syndrome and 17 children on chronic medications were excluded from the study. The remaining 1051 children were given the WHO QOL-BREF questionnaire in their own language and the answers were rated as per the who module.

The WHOQOL-BREF contains a total of 26 questions. To provide a broad and comprehensive assessment, one item from each of the 24 facets contained in the WHOQOL-100 has been included. In addition, two items from the Overall quality of Life and General Health facet have been included. In the instrument, questions are dispersed and not arranged domain-wise. The responses to items were recorded on a 5-point Likert scale.

Domain scores were scaled in a positive direction (higher scores denote better QoL), with a score range of 4-20 that were transformed to 0-100 scale as per the standard procedure. To make WHO QOL-BREF instrument culturally appropriate for Indian adolescents, a minor modification was done by replacing one item in Social domain "Are you satisfied with your sex life?" with "Are you satisfied with the respect you receive from others?[31]

Data was computerized and analysis was done using SPSS version 16.0 (SPSS Inc., Chicago II, USA). We report the baseline characteristics of the study sample. Mean and standard deviation of items and domain scores with 95% confidence intervals were calculated. The difference in scores between groups was determined using ANOVA test and a statistical P value of 0.05 was taken as significant.

RESULTS

Out of 1051 enrolled children, 601 were males and 450 were females. The overall scores across each domain were as follows:

Domain 1- 23.57 (Physical)
Domain 2- 21.24 (Psychological)
Domain 3- 11.22 (Social relations)
Domain 4- 28.14 (Environment)

The overall scores were highest in domain 4 (Environment) and lowest in domain 3 (Social relations). The values were low for the following facets: Personal relations (social domain), Social support (social domain), Physical appearance (physical domain), Respect from others (social domain).

Physical domain

The mean value obtained in this domain was 23.51 with a standard deviation of 3.805 [Table 1]. Highest values were observed in 10 years and 18 year age group whereas lowest values were observed in 16 & 17 year old

adolescents. The difference in values between the age groups 10-19 years was statistically significant (P<0.000) (Table 5).

Psychosocial domain

The mean value in psychosocial domain was 21.53 with a standard deviation of 3.053 (Table 2). Higher scores were observed in 10, 12 and 18 years age groups, while 14 and 16 years age group adolescents recorded the lowest scores. The difference in scores between all age groups was statistically significant (P<0.000) (Table 5).

Social domain

Social Domain recorded the lowest mean value 11.81 with standard deviation of 2.927 (Table 3). The lowest values in this domain were observed in 14 years and 17 year age groups. Higher values were recorded in 10, 12, 15 and 18 year age groups. The difference in scores between all age groups was statistically significant (P<0.000) (Table 5).

Table 1: Physical domain.

Age	N	Mean	Std. deviation	Std. error	95% confidence interval for mean		Minimum	Maximum
					Lower bound	Upper bound		
10	77	24.57	3.201	0.365	23.84	25.30	16	32
11	92	23.74	3.747	0.391	22.96	24.52	12	33
12	77	24.22	3.397	0.387	23.45	24.99	16	33
13	75	23.40	3.643	0.421	22.56	24.24	12	32
14	89	23.47	3.972	0.421	22.64	24.31	12	33
15	130	23.94	3.727	0.327	23.29	24.59	16	31
16	121	22.69	3.746	0.341	22.01	23.36	10	30
17	134	22.08	4.499	0.389	21.31	22.85	10	31
18	132	24.31	3.218	0.280	23.76	24.86	16	32
19	124	23.36	3.803	0.341	22.69	24.04	10	31
Total	1051	23.51	3.805	0.117	23.28	23.74	10	33

Table 2: Psychological domain.

Age	N	Mean	Std. deviation	Std. error	95% confidence interval for mean		Minimum	Maximum
					Lower bound	Upper bound		
10	77	22.34	3.327	0.379	21.58	23.09	13	29
11	92	21.98	3.832	0.399	21.18	22.77	11	33
12	77	22.42	2.962	0.338	21.74	23.09	13	29
13	75	21.87	3.334	0.385	21.10	22.63	12	28
14	89	20.73	3.059	0.324	20.09	21.37	12	26
15	130	21.15	2.553	0.224	20.71	21.60	13	26
16	121	20.88	2.406	0.219	20.45	21.32	14	25
17	134	21.04	2.996	0.259	20.53	21.56	12	26
18	132	22.48	3.221	0.280	21.92	23.03	13	29
19	124	21.05	2.492	0.224	20.61	21.49	13	26
Total	1051	21.53	3.053	0.094	21.34	21.71	11	33

Environment domain

The highest mean value among all domains was noted for the environment domain. A mean value of 28.43 with a standard deviation of 3.985 was recorded in this domain (Table 4). Though higher values were observed among all age groups, the 15 year age group recorded the highest value. The lowest scores were observed in the 13 year & 17 year age groups. The difference in scores between the age groups was however statistically not significant. (P=1.52) (Table 5).

Table 3: Social domain.

Age	N	Mean	Std. deviation	Std. error	95% confidence interval for mean		Minimum	Maximum
					Lower bound	Upper bound		
10	77	12.92	3.157	0.360	12.21	13.64	6	26
11	92	11.89	2.650	0.276	11.34	12.44	3	15
12	77	12.36	2.145	0.244	11.88	12.85	6	15
13	75	11.73	2.859	0.330	11.08	12.39	3	15
14	89	10.66	3.052	0.324	10.02	11.31	3	15
15	130	12.31	2.227	0.195	11.92	12.69	6	19
16	121	11.44	2.723	0.248	10.95	11.93	5	17
17	134	10.43	3.676	0.318	9.80	11.06	3	17
18	132	12.79	2.820	0.245	12.30	13.27	6	26
19	124	11.89	2.532	0.227	11.44	12.34	5	19
Total	1051	11.81	2.927	0.090	11.63	11.99	3	26

Table 4: Environment domain.

Age	N	Mean	Std. deviation	Std. error	95% confidence interval for mean		Minimum	Maximum
					Lower bound	Upper bound		
10	77	28.82	4.847	0.555	27.71	29.92	13	40
11	92	28.26	4.324	0.451	27.37	29.16	13	39
12	77	28.82	4.847	0.555	27.71	29.92	13	40
13	75	27.85	4.352	0.502	26.85	28.85	13	39
14	89	28.42	3.756	0.398	27.62	29.21	20	39
15	130	29.14	3.651	0.320	28.50	29.77	13	38
16	121	28.22	2.847	0.259	27.71	28.74	21	35
17	134	27.66	3.361	0.290	27.08	28.23	21	39
18	132	28.42	4.736	0.412	27.61	29.24	13	40
19	124	28.69	3.340	0.300	28.10	29.29	13	38
Total	1051	28.43	3.985	0.123	28.18	28.67	13	40

Table 5: Test of significance for all domains.

Anova tests	Sum of squares	DF	Mean square	F	Significance
Physical domain					
Between groups	598.053	9	66.450	4.736	0.000
Within groups	14606.628	1041	14.031		
Psychological domain					
Between groups	442.115	9	49.124	5.474	0.000
Within groups	9341.749	1041	8.974		
Social domain					
Between groups	667.027	9	74.114	9.265	0.000
Within groups	8327.671	1041	8		
Environment domain					
Between groups	209.945	9	23.327	1.475	0.152
Within groups	16460.942	1041	15.813		

Male versus female comparison

Males recorded higher overall scores in Domain 1 (Physical) and Domain 3 (Social), whereas Females had higher overall scores in Domain 2 (Psychosocial) and Domain 4 (Environment). However, the differences in scores between the two sexes were not statistically significant for any domain (Table 6).

Table 6: Male versus female comparison.

Domain	Sex	N	Mean	Std. deviation	Std. error mean
Physical	Male	601	67.30	11.167	0.456
	Female	450	66.98	10.475	0.494
Psychological	Male	601	71.73	10.323	0.421
	Female	450	71.81	9.986	0.471
Social	Male	601	79.65	20.349	0.830
	Female	450	77.54	18.288	0.862
Environmental	Male	601	70.40	10.245	0.418
	Female	450	71.96	9.508	0.448
Overall	Male	601	65.52	7.662	0.313
	Female	450	65.69	7.833	0.369

DISCUSSION

Adolescent Health is an important area for primary care and is also influenced by diverse factors that may alter it. Evaluation of health related issues in this age group may require additional skills and techniques. Accessing heath care during this period other than for Physical health related issues is poor. Assessment of the quality of life is one method that may help us to determine the adolescent perspective of health and help us plan a comprehensive intervention. Our study attempted to determine the domain in which the adolescents perceived to have poor quality of life and to explore the possible reasons for it.

According to our study, Indian adolescents had lowest QOL in the psychosocial domain (mean score-12) and had high QOL in environment domain (mean score-28). The facets in which the adolescents rated low were family relations, interpersonal relations and social support (social domain). They rated high QOL in facets like Financial resources, Freedom, physical safety and security, Home environment, Opportunities for acquiring new information and skills Participation in and opportunities for recreation / leisure activities Physical environment (pollution / noise / traffic / climate) and Transport (environment domain). Based on our study the questions which were given low rating were: Are you able to accept your bodily appearance (physical domain), how satisfied are you with your personal relationships? (Social domain), are you satisfied with the respect from others? (Social domain). Highest scores were given to money required for daily activities, information needed for day to day life and opportunities for leisurely activities. The study implies that family relations, positive behaviour and social support have a great impact on adolescent's behaviour and their development.

In physical domain, we studied the quality of life in adolescents who had normal physical appearance (absence of any chronic pain and discomfort). Our study showed that the adolescents who had no pain or who don't require any medication in their day to day life rated higher quality of life than who had pain. A study done by Gold JI et al showed that Chronic pain and fatigue are common physical complaints among children and adolescents.[28] According to the study, Chronic or recurrent pain is a common occurrence among children and adolescents, affecting as much as 25% of the pediatric population. Frequent complaints include abdominal pain, headache, and musculoskeletal pain. Children and adolescents with chronic pain frequently report disturbances in sleep and eating habits, reduced participation in social activities or hobbies, and school absence, which affects their overall sense of well-being (quality of life). In a study done by Berrin et al a similar mediation model was proposed where fatigue was hypothesized to mediate the effects of pain on children's HRQOL, specifically their school functioning.[19] In psychosocial domain our study explored the relationship between enjoyment of life (positive feelings), adolescents with negative feelings, those in a depressed mood. We found that adolescents who had good self-esteem and adolescents with good body image had better quality of life. According to Swallen KC et al, Adolescents who had significantly worse self-reported health had functional limitation.[20] In a study done by Pinhas-Hamiel O et al enlightened that these children reported significantly lower HRQOL in physical, social and school domains compared with normal weight children ($P<0.01$).[21] Our study showed that, adolescents who rated poor body image possessed low quality of life when compared to other adolescents. A study done by Schwimmer JB et al hypothesized that poor body image children and

adolescents, when compared with healthy children and adolescents, would have worse health-related QOL.[22]

The adolescents with good positive thoughts, self-esteem had better quality of life than those who had negative thoughts and low self-esteem. Standage M et al showed that positive prediction of general self-esteem, will positively predict HRQOL.[23] A study done by Mitchell CM et al in which, problem behaviours (antisocial behaviour, alcohol use, drug use, and risky sexual behaviour) and positive behaviours (school success, cultural activities, competencies, and community-mindedness) were compared as predictors of quality of life and showed that positive behaviours were good predictors of quality of life than the problem behaviours.[24]

Studies have shown that adolescents who possessed good life satisfaction had good quality of life. In our study adolescents who were satisfied with their life had better QOL than those who were not satisfied with their lives. Gilman R et al showed that high life satisfaction is associated with some mental health benefits and thus leading to better QOL.[25] Our study showed that adolescents have poor perception about their family relations, and interpersonal relations. Hence they possess lowest quality of life in social domain which measures these facets.

Aro H et al studied the role of family, friends in mediating the impact of adverse life events on psychosomatic symptoms in mid-adolescence.[26] In that study, adolescents who had experienced adverse life events and reported a poor relationship with one or both parents had the highest levels of symptoms and low quality of life and lack of friends was also associated with psychosomatic symptoms.

In another study by Berndt TJ et al states that a high-quality friendship is characterized by high levels of prosocial behaviour, intimacy, and other positive features, and low levels of conflicts, rivalry, and other negative features.[27] Friendship quality has been assumed to have direct effects on many aspects of children's social development, including their self-esteem and social adjustment. The adolescents with good family relations reported high quality of life than others. A study done by Overturf JV et al showed that parents who spend more time supervising their children have children who engage in fewer risky behaviours.[28] Another aspect of parental monitoring is the amount of responsibility parents give children for household upkeep.

Adolescence is also a time of mental and psychological adjustment; a situation of being no longer a child, but not yet an adult either. The main change is the development of an integrated and internalized sense of identity. This means, to some degree, drawing away from other members of the family and developing more intense relationships with peers. Oswalt A et al showed the quality of peer relationships changes during adolescence.[29] These qualitative changes are due to greater cognitive and emotional maturity. Hence a good peer relationship promotes better quality of life.

In our study, adolescents possessed highest quality of life in environment domain. They were highly satisfied with the physical environment, transport facilities and leisurely activities. This statement was proved in a study done by Gilman R et al which assessed the relationship between life satisfaction, social interest, and participation in extracurricular activities among adolescent students and showed that higher social interest was significantly related to higher levels of overall satisfaction, as well as satisfaction with friends and family.[30] Adolescents who participated in greater numbers of structured extracurricular activities reported higher school satisfaction.

According to our study, adolescents possessed highest quality of life index in environment domain and lowest in social domain and there is no statistical difference in any domain among male and female students. This shows that there is no difference in their age and sex in any of the four domains. This was also showed in a study done by Dew T et al which proved Individual differences in life satisfaction were not associated with age, grade, or gender but were associated moderately with socioeconomic status.[31]

CONCLUSION

The modified WHO QoL BREF is a reliable, valid and culturally appropriate instrument for assessing the quality of life in healthy Indian adolescents. In our study, the adolescents had good perception about their environment, leisurely activities, transport facilities and accessibility and quality of health care. Adolescents had poor perception about their social relations, personal relations and respect from others. There was no significant difference in perception of quality of life between males and females for any of the domains. The limitations of our study were that it was conducted on Urban/semi-urban areas of the city and may not reflect the status of rural adolescents. Hence, further research is warranted on a larger and more diverse population of indian adolescents to further corroborate our findings.

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