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Report on Health Related Quality of Life and Lifestyle of Bangladeshi Migrants in Melbourne: Use of Multi-Attribute Instruments

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ABSTRACT

Objective: To investigate the HR-QoL of Bangladeshi migrants using seven Multi-Attribute (MA) instruments: AQoL-8D, EQ-5D, SF-6D, HUI3, PWI, SWLS and K-10, and to compare the effectiveness of these instruments for use in a small ethnic community.

Method: Participants for this empirical study comprised Bangladeshi migrants living in Melbourne. Data were collected through a questionnaire designed for this study. Participants were recruited through community organisations, cultural groups, and businesses. The questionnaire was also administered by mail and face to face at different locations including community and social functions, family gatherings and individual households. Respondents who completed the questionnaire were aged between 18 and 65 years old.

Results: In total, 158 people completed the questionnaire, constituting a response rate of 95%. Among the participants, 54% were male, 46% female; 78% married; 85% living with their family; 91% had graduate or postgraduate qualifications and about 73% were employed either full-time or part-time. Over 50% of the participants possess excellent or very good health and 83% do not have any significant illness. Both males and females had 'high' or 'very high' levels of psychological distress and were found to be more overweight but less obese compared with the Australian population. About 80% reported that they never drank alcohol or smoked cigarettes. Length of stay in the host country was found to be important for the adaptation process. About 54% of the respondents had lived in Australia for less than 10 years and 46% 10 or more years in Australia. All seven MA instruments were highly correlated. The recently developed AQoL-8D was most strongly correlated with the K-10, SF-6D, EQ-5D and PWI. The HUI3 produced the highest number of individuals in full health (114) and AQoL-8D the fewest (6). The logit analysis shows the importance of employment to the quality of life, but also indicates that age plays a role.

Conclusions: This research addresses the three specific aims and provides a comparison of the effectiveness of seven multi-attribute instruments for measuring quality of life among Bangladeshi migrants in Australia. It uses non-weighted QoL scores and a relatively simple sensitivity test. Despite these weaknesses, the findings from the analysis, based on a comparison of psychometric scores from the seven MA instruments, provide both a model and baseline information for the assessment and validation of multi-instrument comparisons for a small ethnic community.

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Introduction

The health and quality of life of migrants has long been an area of interest for health economics researchers. It provides a fascinating insight into how people adapt to new environments and how they struggle to maintain old habits and customs without sacrificing what is important to them – in brief, their quality of life.

Many Multi-Attribute (MA) instruments are used to measure Health-Related Quality of Life (HR-QoL). These include a large number of psychometric, disease-specific instruments, as well as and a small number of generic Multi-Attribute Utility (MAU) instruments. These instruments may be used to measure and evaluate the HR-QoL of the general public and/or patients with or without the use of utility weights [1, 2]. With utility weights they may be used in economic analyses to produce the utility scores needed for the calculation of Quality Adjusted Life Years (QALYs), which are the unit of output in cost utility analysis [3]. These multi attribute utility (MAU) instruments include the Assessment of Quality of Life (AQoL)-8D, the EQ-5D (EuroQoL), the Short-Form Six-Dimension (SF-6D) and the Health Utilities Index (HUI3). However, to date none of these instruments have been used for measuring the HR-QoL of a small ethnic, although such communities are known to have unique health profiles.

The overall aim of this paper is to examine the HR-QoL of Bangladeshi migrants in Melbourne using seven MA quality of life instruments including the above four plus the Satisfaction with Life Scale (SWLS), the Personal Wellbeing Index (PWI) and the Kessler Psychological Distress Scale (K-10). These last three instruments do not have utility weights and are not confined to health-related quality of life, but attempt to measure aspects of quality of life in general. The specific aims of this paper are threefold: i) to compare the QoL of the Bangladeshi community with the Australian population; ii) to explore different aspects of this community related to their adaptation to their environment; and iii) to present a comparison of these instruments (based on psychometric scores) to assess the effectiveness of each in measuring the QoL among Bangladeshi migrants.

Description of Bangladesh-Born Migrants

South Asian countries, particularly India, Pakistan, Bangladesh and Sri Lanka, which were formerly part of British India, have a history of migration dating back to the colonial period. In the last few decades migrants from South Asian countries have been settling down in developed countries including the USA, Canada, Western Europe and Australia. This movement is usually

believed to be for reasons of employment, higher earnings, better education and training, better quality of life or greater political freedom [4].

Bangladeshi migrants comprise a small community in Australia. According to the ABS 1976 census, only 66 Victorians counted were born in Bangladesh following the end of the 'White Australia Policy'. Within 15 years the community had increased seven-fold to 519. Between 1991 and 2001 there was a dramatic increase in the number of arrivals from Bangladesh. By 2001, 1,418 Bangladesh-born people lived in Victoria [5]. In 2009 the Bangladeshi community living in Melbourne was estimated to be approximately 4,000.

For the purposes of this study, Bangladeshi migrants include people with Bangladeshi parents, whether born in Bangladesh or overseas. The Bangladeshi community in Victoria is currently the second largest in Australia, after New South Wales. They are mainly concentrated in the local government areas of Monash, Maribyrnong, Moreland and Wyndham, with a high proportion of Bangladeshi migrants working as professionals in the fields of education, health and community services. The majority of Bangladeshi migrants, particularly males, are professional and well educated and have entered Australia under the category of 'skilled migration' [6].

Recent literature suggests that migrants in general consistently report poorer HR-QoL in host countries (except the USA). Immigrants from Western Europe, Canada, Australia and New Zealand have health profiles that are better than those of their US-born counterparts [7]. It has been argued, and there is reason to believe, that migrant health will eventually resemble that of the host population [8, 9]. In the short term, migrant health may differ markedly from the host population. However, when such studies are replicated in Australia, it is difficult to see the convergence of host and migrant health. It is believed that the non-convergence of migrants' health and wellbeing in Australia, particularly Bangladeshi migrants, is linked with a number of factors, including the process of adaptation and occupational adjustment in the host country.

The adaptation of social and cultural values in the host country by the migrants has always been a challenge to the settlement process. It is suggested that social systems and other settings within migrant groups are central to the adaptation process as they provide opportunities for meaningful social engagement and participation in social roles [10]. These settings can be conceptualised as activity settings [11] in which people spend time together and have opportunities and access to resources that facilitates the integration of identities and cultures into the new environment. Migrant groups create these settings that foster a sense of community and facilitate the adaptation and adjustment process. Length of residence is also identified as a determining factor for both social adaptation and the body mass index of the migrants in the host country [12].

With regards to Bangladeshi migrants, it has been reported that social and emotional disconnection, isolation and alienation, lack of recognition of professional skills, experiences of racism and discrimination, cultural incongruity, feelings of cultural uprooting and inadequate English language competency contribute to psychological distress and difficulties in adjustment to life in Australia [13]. The presence of co-ethnic communities, social support, networking, family cohesion, and retention of religious values and traditional cultural norms has been associated with gradual acclimatization and successful resettlement in the host country. Networkings with the local Australian communities and acceptance of local cultural values have also been identified as important factors for promoting socio-cultural integration. In general, these factors appear to exert a protective effect against psychological distress in South-Asian migrants.

Seven Multi-Attribute Quality of Life Instruments

Selecting between preference-based MA instruments for measuring HR-QoL in particular situations is an important area for research. Even where instruments purport to measure the same thing, they may not be interchangeable. While some work has been done comparing the validity and sensitivity of alternative instruments [2], to date no multi-instrument comparison has been done for a small ethnic community, presumably because of their asserted suitability for universal use. In this paper seven multi-attribute quality of life instruments have been selected because of their global use and a prior suitability.

The AQoL-8D instrument has been recently developed at the Centre for Health Economics (CHE), Monash University. The instrument consists of 8 dimensions and 35 items. The number of items and the number of responses per item vary. The dimensions and items are summarised in Box 1. The full instrument may be obtained from the CHE website (http://www.buseco.monash.edu.au/centres/che/).

The EQ-5D (EuroQoL) is a standardised instrument which was developed by a multi-disciplinary group of researchers from seven centres across five countries for use as a measure of health outcome [14].

The SF-6D was derived from the SF-12 and SF-36. The SF-36 has become the most widely used measure of general health in clinical studies throughout the world. The SF-6D focuses more on social functioning, while the EQ-5D gives more weight to physical functioning. Both instruments give similar weight to pain and mental health.

Box 1. AQoL-8D instrument

Dimension	Items
Independent Living:	1.Household tasks; 2. Mobility outside the home; 3.Walking; and 4. Self-care;
Life Satisfaction:	5. Content of life; 6. Enthusiasm; 7. Degree of feeling happiness; and 8. Pleasure;
Mental Health:	9. Feelings of depression; 10. Trouble of sleeping; 11.Feeling of angry, 12.Self-harm, 13.Feeling of despair; 14.Worry; 15.Sadness; 16. Tranquility/agitation;
Coping:	17.Having enough energy; 18.Being in control; and 19. Coping with problems;
Relationships:	20. Enjoying relationship with family and friends; 21. Close relationship with family and friends; 22. Social isolation, 23. Social exclusion; 24. Intimate relationship; 25. Family role; and 26. Community role;
Self-worth:	27. Feeling burden; 28.Worthless, and 29. Confidence;
Pain:	30. Experience of serious pain; 31. The degree of pain; and 32. The interference with usual activities caused by pain;
Senses:	33. Vision; 34. Hearing; and 35. Communication.

The Health Utilities Index Mark 3 (HUI3) is a prominent measure of HR-QoL and widely used in population health surveys, clinical studies and cost-utility analyses, especially in Canada, where it originated. The HUI3 has been used to assess health status in a number of chronic conditions.

The Kessler Psychological Distress Scale (K-10) dates from 1992. It has been widely used in the USA as well as in Australia. The K-10 scale is based on 10 questions (items) related to negative emotional states experienced by individuals during the past four week period. There are five response levels for each item based on the amount of time the respondent reports experiencing the particular problem.

The Personal Wellbeing Index (PWI) was developed from the Comprehensive Quality of Life Scale (ComQol). The PWI scale contains nine items relating to life satisfaction, each one corresponding to a quality of life domain. It comprises: standard of living, health, achieving in life, relationships, safety, community-connectedness, future security, spirituality/religion and the level of satisfaction as a whole.

The Satisfaction with Life Scale (SWLS) uses five key statements associated with the level of satisfaction relating to the quality of life as: in most ways life is close to ideal; the conditions of life are excellent; satisfied with life; so far gotten the things wanted in life; and if I could live my life over, I would change almost nothing.

The characteristics of these seven Multi-Attribute instruments, including the number of dimensions, items and response levels are provided in Table 1. This paper does not directly evaluate or assess the validity of these instruments but uses the instrument's score to examine the relationships between the instruments and self-reported quality of life. This is done by comparing the seven measures in terms of the quality of life score generated from the instruments. In this analysis utility weights were not employed. For all of these seven MA instruments, unweighted scores were obtained from the item responses from the participants using the following formula:

$$Score = 1 - \left(\frac{X - X_{min}}{X_{max} - X_{min}} \right) \qquad \ldots \qquad (1)$$

Where x = Individual's total score from summing the response category rank; x_{min} = Instrument's total minimum score; x_{max} = Instrument's total maximum score. This simple algorithm results in values which vary between 1.0 and 0.0

Table 1. Characteristics of 7 the Multi-Attribute Instruments

Instrument	Number of Dimension	No of Items	Response level	Max possible individual score	Min possible individual score
	8	35	4 to 6	176	35
	Independent Living	4	5 to 6	22	4
	Life Satisfaction	4	5	20	4
	Mental Health	8	5 to 6	41	8
AQoL8D	Coping	3	5	15	3
	Relationships	7	4 to 6	34	7
	Self Worth	3	5	15	3
	Pain	3	4 to 5	13	3
	Senses	3	4 to 6	16	3
EQ5D	5*	5	3	15	5
SF6D	6*	6	4 to 6	31	6
HUI3	8*	8	5 to 6	45	8
K10	10*	10	5	50	10
SWLS	5*	5	7	35	5
PWI	9*	9	10	90	0

* Number of Dimension is the same as number of items

Methods

This is an empirical study where the data is mainly collected from primary sources. An open invitation to participate in the project, stating the brief aims and objectives of the study, eligibility, remuneration and how to participate, was prepared and distributed throughout the Bangladeshi community through the leaders of community organisations, cultural groups, family and friends, and community businesses – e.g. grocery shops and restaurants. Three hundred hard copy questionnaires were posted or distributed among the potential participants in five SEIFA (Socio Economic Indicators for Areas) groups to obtain a representative sample. The contents of the questionnaire are summarised in Box 2.

Box 2. Contents of the questionnaire

- Assessment of Quality of Life (AQoL)-8D
- EQ-5D
- SF-6D
- HUI3
- Personal Wellbeing Index (PWI)
- Satisfaction with Life Scale (SWLS)
- Kessler Psychological Distress Scale (K-10)
- Socio demographics and employment
- Lifestyle (smoking, alcohol use, physical exercise, weight concern, main meal, communication with relatives)
- Length of stay, postcode, and overall QoL compared to pre-migration

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Upon agreement, people were given the registration form, explanatory statement and a soft copy of the questionnaire. When preferred, a hard copy of the questionnaire was posted to respondents with a pre-paid response envelope for its return. The questionnaire was also administered face to face among a sample of Bangladeshi migrants at different locations in Melbourne, including community and social functions, family gatherings and individual households. Other than primary data, secondary data also was collected from published and unpublished materials including the Australian Bureau of Statistics (ABS).

Upon receipt of the completed questionnaire from respondents, data was checked and edited before being entered into SPSS (Statistical Package for the Social Sciences) for analysis. In the case of error or omission, the questionnaire was returned for completion. There was a random 20% data check on all variables. All analysis was done using statistical techniques including descriptive statistics, correlation, ANOVA and logistic regression.

Results

In total 166 people expressed interest in participating in the research, of whom 158 completed the questionnaire, constituting a response rate of 95%. The sample size of 158 was justified when a power of 80% and effect size of 22% (.22) at the 5% level of a two tailed test [15] considered. The following results include data from all 158 respondents. The response rate by question varied from a low of 98.7% (respondent's weight) to 100% to all other selected variables.

Socio-Demographic Characteristics

Respondents' characteristics are reported in Tables 2 and 3. Table 2 shows participants' demographic and social characteristics. There were more males (54%) than females (46%) and most of them were married (78%), living with family (85%) and were born in Bangladesh (96%). The age distribution shows a higher proportion in each age group compared to the Australian population (except 55 to 64 years).

The geographical distribution of participants according to SEIFA group, defined by the Socio-Economic Status (SES) of the respondents' postcode, indicated that the majority of Bangladeshi migrants (57%) were from the lower three SEIFA groups (1 to 3) and the remaining 43% were from the higher groups (4 and 5). A lower number indicates more disadvantaged and a higher number indicates a higher level of SES.

Education, employment and income of the participants are reported in Table 3. Most of the migrants are well qualified. About 91% had graduate or postgraduate degrees (compared to 30% of the Australian population) and only 9% had undergraduate qualifications (6% had only completed year 12 or equivalent). There were more males (68%) than females (40%) who had postgraduate degrees. With regards to employment, about 50% were full time, 24% were part-time and 12% were unemployed. Males had more full-time and females had more part-time employment. About two-thirds of males (compared to 30% of females) had full-time and 36% of females (compared to 13% of males) had a part-time position. The 12% unemployment rate for Bangladesh-born migrants was a lot higher than the Australian national unemployment rate (5.8% in July 2009). The unemployment rate for females was nearly double (15%) that of males (8.3%). About 33% of the respondents had a weekly household income of $650 to $1399 and 42% had income more than $1400 per week.

Table 2. Demographics of the participants

Variables	Description	Gender		Total		Aust Standard (%) *
		Male	**Female**	**No**	**%**	
Gender	Male vs Female	53.8	46.2	158	100	48.9 vs 51.1
	18-24 years	15.3	13.7	23	14.6	8.5
	25-34 years	37.6	32.9	56	35.4	16.8
Age Group	35-44 years	17.6	26	34	21.5	18.5
	45-54 years	27.1	26	42	26.6	17.4
	55-64 years	2.4	1.4	3	1.9	13.8
	Total	**85**	**73**	**158**	**100**	
	Married	70.6	86.3	123	77.8	
Marital Status	Single	28.2	11	32	20.3	
	Divorced or Separated	1.2	2.7	3	1.9	
	Total	**85**	**73**	**158**	**100**	
	By myself	7.1	1.4	7	4.4	
Living arrangement	Family including parents/husband/wife/partner/children	75.3	95.9	134	84.8	
	Friends/shared accommodation	17.6	1.4	16	10.1	
	Other	0	1.4	1	0.6	
	Total	**85**	**73**	**158**	**100**	
	Australia	2.4	1.4	3	1.9	
	Bangladesh	95.3	97.3	152	96.2	
Country of Birth	Libya	0	1.4	1	0.6	
	Philippines	1.2	0	1	0.6	
	Other	1.2	0	1	0.6	
	Total	**85**	**73**	**158**	**100**	
	1	20.1	16.4	29	18.4	
	2	9.4	8.2	14	8.9	
SEIFA Group	3	30.6	27.4	46	29.1	
	4	30.6	34.2	51	32.3	
	5	9.4	13.7	18	11.4	
	Total	**85**	**73**	**158**	**100**	

*ABS standard % is shown only the corresponding age groups of survey data.

Respondent's Self-reported health and illness

Bangladesh-born migrants' self-reported health, general health conditions, illness and psychological distress are reported in Tables 4 to 8. When a participant was asked to rate their health, for someone of their age, 13% reported 'excellent', 40% responded 'very good', 37% reported 'good', and 7.6% said 'fair'. Only 3.2% reported that they had 'poor' health and none had 'very poor' health (Table 4). Within the gender group, males and females had similar health. However, the self assessment as 'excellent' was much more common for females (19%) than males (7%) while males were slightly more inclined to report 'very good' and 'good' conditions.

Table 3. Education, Employment and Income Distribution of the Participants

Variables	Description	Gender		Total	
		Male	**Female**	**No**	**%**
	High school	1.2	0	1	0.6
	Completed year 12 or equivalent	2.4	9.6	9	5.7
	Certificate/ Trade qualification	1.2	0	1	0.6
Highest Level of Education	Advanced diploma/ TAFE	0	4.1	3	1.9
	Bachelor/graduate diploma	27.1	46.6	57	36.1
	Postgraduate degree	68.2	39.7	87	55.1
	Total	**85**	**73**	**158**	**100**
	Full-time: self employed or employee	66.7	30.1	78	49.7
	Part-time or casual: self employed or employee	13.1	35.6	37	23.6
	Unemployed, seeking work	8.3	15.1	18	11.5
Employment Status	Not in the labour force/retired/pensioner	0	1.4	1	0.6
	Full time carer	1.2	0	1	0.6
	Student	9.5	9.6	15	9.6
	Other	1.2	8.2	7	4.5
	Total	**84**	**73**	**157**	**100**
	Below $150.00pw	4.8	4.2	7	4.5
	$150 to $349pw	6	2.8	7	4.5
	$350 to $$649pw	15.5	15.3	24	15.4
Gross household income	$650 to $1399pw	36.9	29.2	52	33.3
	$1400 to $1999pw	15.5	27.8	33	21.2
	Above $2000pw	21.4	20.8	33	21.2
	Total	**84**	**72**	**156**	**100**

Table 5 reports general health conditions for the participants. About three quarters of all participants believe they are 'as healthy as anybody' and 'do not get sick easier than other people'. Only 8% expect their health to get worse. When asked 'Do you currently have a significant illness?' 83% responded 'no' and 17% said 'yes'. Within the gender group males and females had similar responses (Table 6).

Table 4. Self-reported health of the migrants

Current level of health	Response	Gender		Total	
		Male	**Female**	**No**	**%**
	Excellent	7.1	19.2	20	12.7
	Very good	41.2	38.4	63	39.9
How would you rate your current level of health, for someone of your age?	Good	40	32.9	58	36.7
	Fair	7.1	8.2	12	7.6
	Poor	4.7	1.4	5	3.2
	Total	85	73	158	100

Table 5. General health conditions of the Bangladesh migrants

General Health Conditions	Response	Gender		Total	
		Male	**Female**	**No**	**%**
I seem to get sick a little easier than other people	Mostly true	10.6	11.0	17	10.8
	Don't know	18.8	15.1	27	17.1
	Mostly false	48.2	41.1	71	44.9
	Definitely false	22.4	32.9	43	27.2
	Total	**85**	**73**	**158**	**100.0**
I am as healthy as anybody I know	Definitely true	17.6	21.9	31	19.6
	Mostly true	57.6	61.6	94	59.5
	Don't know	18.8	8.2	22	13.9
	Mostly false	4.7	5.5	8	5.1
	Definitely false	1.2	2.7	3	1.9
	Total	**85**	**73**	**158**	**100.0**
I expect my health to get worse	Definitely true	1.2	0.0	1	0.6
	Mostly true	9.4	4.1	11	7.0
	Don't know	43.5	37.0	64	40.5
	Mostly false	18.8	19.2	30	19.0
	Definitely false	27.1	39.7	52	32.9
	Total	**85**	**73**	**158**	**100.0**

Table 6. Whether suffer from any significant illness

When asked	Response	Gender		Total	
		Male	**Female**	**No**	**%**
Do you currently have a significant illness?	No	82.4	83.6	131	82.9
	Yes	17.6	16.4	27	17.1
	Total	**85**	**73**	**158**	**100**

Table 7. Self-reported health and demographic characteristics

Age Group/ Education/ Income	How would you rate your current level of health, for someone of your age? (%)					Total	
	Excellent	**Very good**	**Good**	**Fair**	**Poor**	**No.**	**%**
18-24 years	30.0	12.7	10.3	8.3	40.0	23	14.6
25-34 years	45.0	33.3	34.5	50.0	0.0	56	35.4
35-44 years	15.0	19.0	27.6	16.7	20.0	34	21.5
45-54 years	10.0	33.3	24.1	25.0	40.0	42	26.6
55-64 years	0.0	1.6	3.4	0.0	0.0	3	1.9
Total (N)	**20**	**63**	**58**	**12**	**5**	**158**	**100.0**
High school	0.0	1.6	0.0	0.0	0.0	1	0.6
Completed year 12 or equivalent	20.0	4.8	1.7	0.0	20.0	9	5.7
Certificate/ Trade qualification	0.0	1.6	0.0	0.0	0.0	1	0.6
Advanced diploma/ TAFE	0.0	0.0	5.2	0.0	0.0	3	1.9
Bachelor/graduate diploma	45.0	28.6	36.2	58.3	40.0	57	36.1
Postgraduate degree	35.0	63.5	56.9	41.7	40.0	87	55.1
Total (N)	**20**	**63**	**58**	**12**	**5**	**158**	**100.0**
Below $150.00pw	5.3	8.1	6.9	16.7	0.0	12	7.7
$150 to $349pw	0.0	6.5	3.4	16.7	20.0	9	5.8
$350 to $$649pw	31.6	14.5	22.4	8.3	20.0	30	19.2
$650 to $1399pw	26.3	25.8	31.0	50.0	40.0	47	30.1
$1400 to $1999pw	15.8	24.2	17.2	8.3	20.0	30	19.2
Above $2000pw	21.1	21.0	19.0	0.0	0.0	28	17.9
Total (N)	**19**	**62**	**58**	**12**	**5**	**156**	**100.0**

Self-reported health was also analysed according to participant's age, education and income. Table 7 shows that respondents who reported 'excellent' health were aged 34 years or less (75%), graduate or postgraduate degree holders (80%), and had income more than $1400 or more (37%). Fair and poor health is associated with older age groups (35 to 54 years) and low income (less than $1400 pw) people.

The level of psychological distress by gender is reported in Table 8. The Victorian Population Health Survey (2001) adopted the following set of cut-off scores and the prevalence of levels of psychological distress: 10 – 19 (Low); 20 – 24 (Moderate), 25 – 29 (High); and 30 -50 (Very High). The data show that most of the Bangladeshi participants had low levels of psychological distress – 68% of males and 73% of females. But the percentages are smaller than the better off Australian population (86% for males and 80% for females). In contrast, more males than females had moderate household duties and marginally more had 'high' or 'very high' levels of distress than in the Australian population (Table 8).

Table 8. Level of psychological distress by gender

Level of Psychological Distress	Gender		Total		National Health Survey 2001	
	Male	**Female**	**No**	**%**	**Male**	**Female**
Low (10 - 19)	68.2	72.6	111	70.3	85.8	79.6
Moderate (20 - 24)	16.5	17.8	27	17.1	8.3	10.6
High (25 - 29)	9.4	8.2	14	8.9	3.1	5.5
Very High (30 - 50)	5.9	1.4	6	3.8	2.7	4.4
Total	85	73	158	100	100	100

Lifestyle of the Migrants

The lifestyle of Bangladeshi migrants was defined to include physical exercise, concern with self weight, Body Mass Index (BMI), alcohol use, smoking behaviour, main meal, social participation and engagement, and communication with relatives. The lifestyles of the participants, so defined, are reported in Tables 9 to 11. Table 9 shows that Bangladeshi migrants were very concerned (28%) with their weight (either all of the time or most of the time) but did not do intense regular exercise. Only 11% (15% male 7% female) of the respondents reported that they took regular intense physical exercise, and 74% exercised moderately. About eight in ten reported that they never drank alcohol or smoked cigarettes. The proportion of females reporting non-smoking and non-drinking was a little higher than for males. It appears that they acquired these habits from their parents because nearly all of the respondent's parents (83% and 93% respectively) do not smoke or drink alcohol. About 97% of smokers started smoking with friends and close associates. About 91% of respondents said they usually eat home-cooked traditional Bangladeshi meals on most days. Most of the Bangladesh-born migrants (82%) had daily or weekly telephone or physical contact with family members who are not living with them.

The BMI of the respondents is reported in Table 10. This shows that about 50% of Bangladeshi migrants were either overweight or obese. Males were found to be more overweight than females. Both males and females were found to be more overweight but less obese when compared with the Australian population.

Bangladeshi migrants are not well connected with the Australian local community. Table 11 presents respondents' participation, social engagement and commitments. When asked about participation, 37% said they help a local group as a volunteer and 49% had attended a local community event in the past six months. About 27% were active members of a local club, 17% were on a local group management committee and 19% had participated in community action to deal with an emergency in the past 3 years.

Table 9. Lifestyle of Bangladesh-born migrants by gender

Variables	Response	Gender		Total	
		Male	**Female**	**No**	**%**
Do you do any physical exercise during leisure time?	Regular - Intense	15.3	6.8	18	11.4
	Moderate - Sometimes	68.2	80.8	117	74.1
	Inactive - Never	16.5	12.3	23	14.6
	Total	85	73	158	100
Are you concerned with your weight?	All of the time	9.4	15.1	19	12.0
	Most of the time	21.2	9.6	25	15.8
	Some of the time	40	38.4	62	39.2
	A little of the time	20	19.2	31	19.6
	None of the time	9.4	17.8	21	13.3
	Total	85	73	158	100
How often do you have a drink containing alcohol?	Never	70.6	82.2	120	75.9
	Monthly or less	14.1	11	20	12.7
	2-3 times a month	10.6	6.8	14	8.9
	2-3 times a week	4.7	0	4	2.5
	Total	85	73	158	100
Do either of your parents drink alcohol?	Yes	5.9	8.2	11	7
	No	94.1	91.8	147	93
	Total	85	73	158	100
What is your current smoking status?	Never smoked	62.4	97.3	124	78.5
	Smoking daily	12.9	0	11	7
	Smoking occasionally	9.4	2.7	10	6.3
	Now quit	15.3	0	13	8.2
	Total	85	73	158	100
With whom did you first smoke?	By myself	3.3	0	1	3.1
	With friends/close associates	96.7	100	31	96.9
	Total	30	2	32	100
Do either of your parents smoke?	Yes	20	13.7	27	17.1
	No	80	86.3	131	82.9
	Total	85	73	158	100
What do you usually take as your main meal in most days?	Home cooked traditional Bangladeshi meal (rice/curry etc)	89.4	93.2	144	91.1
	Aussie food (steak, chicken, sausages, bread, mashed potato	4.7	4.1	7	4.4
	Different ethnic traditional food at restaurant	4.7	2.7	6	3.8
	Take away food from fast-food restaurant	1.2	0	1	0.6
	Total	85	73	158	100
How often do you see or talk to family members other than those who are living with you?	Daily	25.9	30.1	44	27.8
	Every week	52.9	54.8	85	53.8
	Every month	18.8	9.6	23	14.6
	Every few months	0	5.5	4	2.5
	Seldom or never	2.4	0	2	1.3
	Total	85	73	158	100

Table 10. BMI of Bangladesh-born migrants by gender

BMI Categories	Gender Male	Gender Female	Total No	Total %	Aust population 2007 Male (%)	Aust population 2007 Female (%)
Underweight (<20)	3.6	9.7	10	6.4	1.1	4.6
Normal (20.0-24.99)	41.7	47.2	69	44.2	40.0	50.8
Overweight (25.0-29.99)	45.2	37.5	65	41.7	41.3	26.2
Obese (30 +)	9.5	5.6	12	7.7	17.6	18.5
Total	84	72	156	100.0		

Table 11. Participation, social engagement and commitment (n = 158)

When asked about participation	Response Yes (%)	Response No (%)
Do you help out a local group as a volunteer?	36.7	63.3
Have you attended a local community event in the past 6 months (e.g., working bees, fete, school concert, craft exhibition)?	48.7	51.3
Are you an active member of a local organisation/community group or club (e.g., sports, social club)?	26.6	73.4
Are you on a management committee or organising for any local group or organisation?	17.1	82.9
In the past 3 years, have you ever joined a local community action to deal with an emergency?	19.0	81.0

Table 12. Effect of length of stay on BMI and psychological distress

Variables	Length of stay	N	Mean	SD	SE	95% Confidence Interval for Mean LB	95% Confidence Interval for Mean UB	Min	Max	Sig.
Body Mass Index	Less than 5 years	39	24.6	3.3	0.5	23.5	25.6	17.3	38.4	
	5 to 9 years	45	26.5	4.1	0.6	25.2	27.7	18.4	40.1	0.001
	10 to 14 years	27	23.3	2.8	0.5	22.2	24.4	18	28.5	
	15 years +	45	25.8	3.4	0.5	24.8	26.8	18.8	37.9	
	Total	156	25.2	3.7	0.3	24.7	25.8	17.3	40.1	
K10 Score	Less than 5 years	40	17.8	6.9	1.1	15.5	20	10	36	
	5 to 9 years	46	16.6	6.2	0.9	14.8	18.4	10	31	0.005
	10 to 14 years	27	17.4	6.5	1.3	14.8	20	10	32	
	15 years +	45	13.5	4.2	0.6	12.2	14.7	10	25	
	Total	158	16.1	6.1	0.5	15.2	17.1	10	36	

Length of stay in the host country is important for the adaptation process and occupational adjustment of migrants. The majority of Bangladeshi migrants are relatively new to Australia. About 54% of the respondents had lived in Australia for less than 10 years and 46% for 10 or more years in Australia. The BMI and psychological distress level of migrants were analysed by the length of stay (using ANOVA). Table 12 reports the results. It reveals that length of stay has a significant effect on BMI and K-10 scores. The mean varies from a low of 23.3 in the 10 to 14

year category to a high of 25.8 in the 15+ group for BMI, and 13.5 in the 15+ years to a high of 17.8 in the 5 year group for the K-10 score (sig 0.001 and 0.005 respectively).

Comparison of QoL Instruments

Correlations were obtained between the seven standard MA instruments and an analysis undertaken to determine instrument sensitivity near full health. Table 13 reports the correlation matrix. Although a bivariate correlation is only a simple measure of the relationships it is revealing. All of the seven instruments were fairly well correlated. The matrix revealed that AQoL-8D was more highly correlated with the K-10, SF-6D and EQ-5D measures. In all cases the correlations were significant at the 0.01 level. The last column of Table 13 indicates the other instruments with which each instrument is most highly correlated. This comparison reveals that the AQoL-8D is the instrument which correlates most highly with the following four instruments: the SF-6D, SWLS, PWI and K-10, as well as overall QoL. The SF-6D is the instrument most highly correlated with the EQ-5D and HUI3. Neither of these instruments is the most highly correlated with another instrument.

Table 14 reports the seven QoL scores for the survey population. This reveals that the HUI3 produced the highest proportion (97%) of 'excellent' QoL scores for people, followed by the EQ-5D (79%), SF-6D (71%), K-10 (67%) and AQoL-8D (45%). In other words, over 90% of 'very good' and 'excellent' QoL was found according to these five instruments. The PWI and SWLS produced the least proportion of 'excellent' QoL (38% and 31% respectively). These two instruments also generated a small proportion of 'very poor' and 'poor' QoL, indicating the tendency of people to gravitate to middle scores using these instruments.

Table 13. Correlation between 7 multi-attribute indices of QoL and self-reported overall quality of life of Bangladeshi migrants

Index	1	2	3	4	5	6	7	8	Highest correlations
1. AQoL-8D	1								K-10
2. EQ-5D	.558[**]	1							SF-6D
3. SF-6D	.666[**]	.605[**]	1						AQ0L-8D
4. HUI3	.487[**]	.555[**]	.644[**]	1					SF-6D
5. PWI	.530[**]	.466[**]	.487[**]	.520[**]	1				AQ0L-8D
6. SWLS	.495[**]	.435[**]	.420[**]	.429[**]	.076	1			AQoL-8D
7. K-10	.680[**]	.559[**]	.550[**]	.418[**]	.136	.440[**]	1		AQoL-8D
8. Overall QoL	.479[**]	.306[**]	.432[**]	.371[**]	.279[**]	.274[**]	.282[**]	1	AQoL-8D
Average Correlations	.567	.524	.567	.511	.437	.446	.508	.428	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 14. HR-QoL of Bangladeshi migrants according to the 7 MA instruments

Level of HR-QoL and Score	AQoL-8D	EQ-5D	SF-6D	HUI3	PWI	SWLS	K-10
Very Poor (0.0-0.20)	0.0	0.0	0.0	0.0	1.3	4.4	0.0
Poor (0.21-0.40)	0.0	0.0	0.0	0.0	1.3	3.8	0.6
Good (0.41-0.60)	3.8	2.5	4.4	0.6	13.9	11.4	8.9
Very Good (0.61-0.80)	51.3	18.4	24.7	2.5	45.6	49.4	24.1
Excellent (0.81-1.00)	44.9	79.1	70.9	96.8	38.0	31.0	66.5
Total	158	158	158	158	158	158	158

Figure 1 shows the frequency distribution of 'full health' by the seven MA instruments when each instrument, in turn, records 'full health' for a respondent. The highest proportion (72%) of people with full health was reported by HUI3 followed by EQ-5D (58%). The lowest proportion (4%) of Bangladeshi participants having full health was reported by the AQoL-8D. Table 15 summarises the frequency distribution of 'other' instruments when a particular instrument records 'excellent health' defined as a standardised score above 9.5. Thus when AQoL-8D records excellent health (n = 6) the other three instruments record good health (above 0.8). In contrast, when EQ-5D records excellent health for 91 people, the AQoL-8D and the SF-6D record scores that are at least 15 points lower for 33 on 7 of them respectively. When HUI records excellent health for 114 people, AQoL-8D and SF-6D give scores 15 points lower for 49 and 18 of them respectively. AQoL-8D assigns a score at least 35 points lower than EQ5D and HUI for one person. These results suggest the insensitivity of the latter two instruments near full health, ie the mission of important elements of a health state (Table 15).
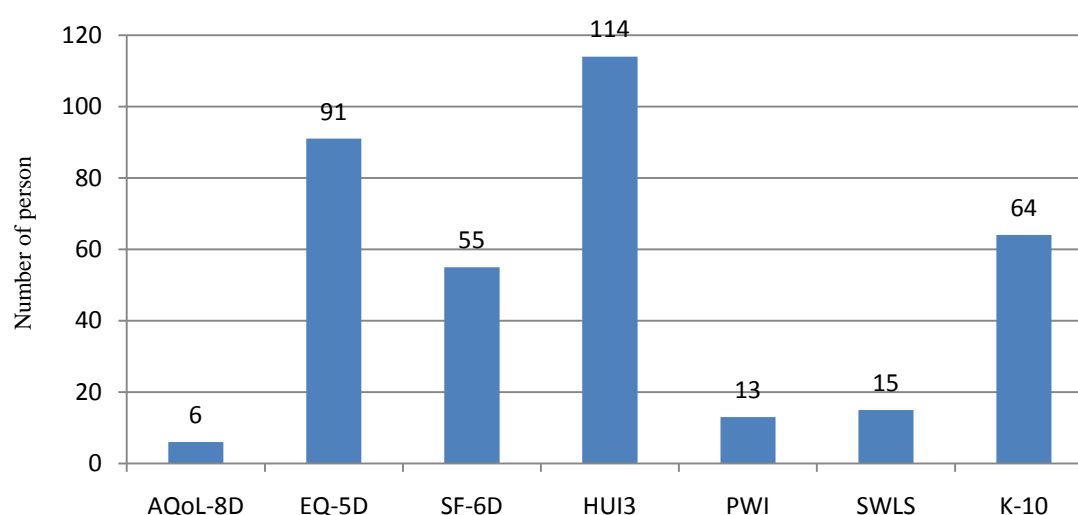
Figure 1. Comparison of full health by 7 MA instruments (non-weighted score) (n = 158)

Table 15. Frequency distribution of the respondents in range when a particular instrument records full health

Instrument's value >0.95 or full health		Instrument and Respondents in range	Respondents in range				
Instrument	N		1.00 - 0.81	0.80 - 0.61	0.60 - 0.41	0.40- 0.21	0.20 - 0.0
AQoL-8D	6	AQoL-8D	6				
		EQ-5D	6				
		SF-6D	6				
		HUI3	6				
		PWI	4	2			
		SWLS	2	4			
		K-10	6				
EQ-5D	91	EQ-5D	91				
		AQoL-8D	58	32	1		
		SF-6D	84	7			
		HUI3	90	1			
		PWI	35	46	9		
		SWLS	36	46	5	2	2
		K-10	77	11	3		
SF-6D	55	SF-6D	55				
		AQoL-8D	42	13			
		EQ-5D	53	1	1		
		HUI3	55				
		PWI	27	24	4		
		SWLS	22	29	2	1	1
		K-10	50	5			
HUI3	114	HUI3	114				
		AQoL-8D	65	48	1		
		EQ-5D	104	10			
		SF-6D	96	17	1		
		PWI	45	57	11		1
		SWLS	40	60	10	2	2
		K-10	87	20	7		

Finally, migrants' overall quality of life compared to their pre-migration situation was analysed using socio-economic status and lifestyle as explanatory variables. The independent variables are shown in Table 16. Table 17 reports the result of the logit analyses. This indicates that age, education, employment and income are all associated with the likelihood of a person's QoL being greater than pre-migration. As expected, adaptation is more likely amongst the young, well educated, the employed and those with higher incomes. Unexpectedly the length of time since migration was not strongly associated, possibly reflecting a correlation with employment. BMI and smoking had no effect.

Table 16. Independent variables used in logit analysis

Name	Definition	Name	Definition
Age groups		**Length of stay**	
agegp1	18-24yrs	length1	<5yrs
agegp2	25-34yrs	length2	5-9yrs
agegp3	35-44yrs	length3	10-14yrs
agegp4	45yrs+	length4	15yrs+
Levels of education		**bmi**	
edu1	non graduate	bmi1	underweight
edu2	graduate	bmi2	normal
edu3	postgraduate	bmi3	overweight
Employment		bmi4	obese
emp1	full-time	**Smoking**	
emp2	part-time or casual	smok1	Never smoked
emp3	unemployed	smok2	smokers
emp4	not in the labour force		
emp5	student		
Income			
income1	<$350pw		
income2	$350-$649pw		
income3	$650-$1399pw		
income4	$1400-$1999pw		
income5	$2000+pw		

Table 17: Logistic regression of Migrants' quality of life and some socio-economic and lifestyle variables

```
Logistic regression                       Number of obs   =          145
                                            LR chi2(23)    =        44.22
                                            Prob > chi2    =       0.0049
Log likelihood = -46.089165                 Pseudo R2      =       0.3242
```

QoL	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
agegp2	3.824208	1.360564	2.81	0.005	1.157552	6.490863
agegp3	4.132262	1.428841	2.89	0.004	1.331784	6.932739
agegp4	3.609562	1.472405	2.45	0.014	.7237007	6.495423
edu2	-2.512514	1.33321	-1.88	0.059	-5.125557	.1005291
edu3	-5.00697	1.708767	-2.93	0.003	-8.356092	-1.657849
emp1	-16.71099	1.36339	-12.26	0.000	-19.38318	-14.03879
emp2	-18.12718	1.385345	-13.08	0.000	-20.8424	-15.41195
emp3	-15.72382	.	.	.	.	.
emp4	-17.00807	1.647948	-10.32	0.000	-20.23799	-13.77815
emp5	-17.26434	1.397101	-12.36	0.000	-20.00261	-14.52608
income1	3.895856	2.735859	1.42	0.154	-1.466328	9.258041
income2	3.937612	2.766769	1.42	0.155	-1.485155	9.360378
income3	6.180095	2.905201	2.13	0.033	.4860059	11.87418
income4	5.911771	2.998099	1.97	0.049	.035604	11.78794
income5	5.425123	2.954289	1.84	0.066	-.3651773	11.21542
length1	2.215217	1.306136	1.70	0.090	-.3447622	4.775195
length2	-.6346461	1.032841	-0.61	0.539	-2.658977	1.389685
length4	1.045388	1.039273	1.01	0.314	-.9915505	3.082327
bmi1	2.365075	2.194392	1.08	0.281	-1.935853	6.666004
bmi2	3.201327	2.062714	1.55	0.121	-.8415182	7.244171
bmi3	3.121439	2.109106	1.48	0.139	-1.012334	7.255212
bmi4	1.8552	2.298027	0.81	0.419	-2.64885	6.359249
smok2	-.1214126	.8520541	-0.14	0.887	-1.791408	1.548583
_cons	11.12334	3.834689	2.90	0.004	3.607491	18.6392

Note: 0 failures and 1 success completely determined.

Discussion

This paper examines the quality of life – particularly, the health-related quality of life – of Bangladeshi migrants living in Melbourne, Australia, using seven multi-attribute (MA) instruments. The socio-economic and lifestyle characteristics of the migrants were analysed to throw light on the process of adaptation and adjustment in the host country. The instruments employed in this study vary substantially in terms of the number of dimensions employed, as well as the items and response levels, and hence maximum and minimum possible individual scores (Table 1).

The analysis of the dataset indicates that the sample is well represented in terms of gender, age group and SEIFA distribution. The higher proportion of middle aged respondents (compared to the Australian population) is due to the selection of particular age groups (18 to 65 years) for this study. Most of the respondents are married and have a family (Table 2). They are well educated, employed either full-time or part-time and have upper-end gross household incomes (Table 3).

The results of this study indicate that the vast majority of Bangladeshi migrants are healthy and have no significant illness over and above the Australian population. The self-reported health conditions reinforce this conclusion. The majority of the respondents belong to an active age group (18-34 years), are well educated and have an income of more than $1400 pw and possess excellent health. However, a relatively high level of psychological distress amongst this community is consistent with prior findings [13].

The results from the analysis of the lifestyle characteristics of the migrants indicate that this community is different from the Australian general population. More than three quarters do not smoke or drink alcohol. More than 90% eat home-cooked traditional Bangladeshi meals (Table 9). All these lifestyle aspects are associated with the quality of life, including health-related quality of life.

About 50% of Bangladesh-born migrants are either overweight or obese and not well integrated with the Australian community (Table 11). Addressing this issue in detail is beyond the scope of this study and would require programs or initiatives both at the community and government levels. The analysis of length of stay on BMI and psychological distress indicates a significant effect (Table 12). However, this is not reflected in the multivariate analysis of overall QoL. But the result is consistent with previous results reporting the effects on BMI of education, gender and ethnicity [12].

Results of the seven MA instrument comparisons indicate that all were highly correlated. The correlation matrix indicates that the recently developed AQoL-8D was most strongly correlated with the K-10, SF-6D, EQ-5D and PWI. In spite of their correlations, each of the instruments produced different results in terms of the non-weighted QoL scores (0.0 to 1.0 ie worst to full health). The wide variation in instrument scores is probably due to the varied number of dimensions, items and response levels. The instruments with the fewest response levels tended to produce higher average instrument scores. AQoL-8D uses 35 items within 8 dimensions, making it a more sensitive instrument for capturing different aspects of HR-QoL. The results indicated the instrument produced varied proportions of migrants falling within the excellent health range: 97% by the HUI3 to 31% by the SWLS (Table 14). Even this later figure, however, is higher than respondents' self reported health (compare Table 4 and Table 14). The high level of QoL has also been reflected in the case of sensitivity of full health measures when all seven MA instruments were compared. The HUI3 produced the highest number of full health (114) and AQoL-8D measured only six at full health (Figure 1 and Table 15).

Finally, the logit analysis shows the highly significant negative effect of unemployment on the quality of life of Bangladeshi migrants, but also indicates that age, education and income plays a role.

Conclusion

This study was a pilot for a larger study of the entire Australian population. Nevertheless it had the additional benefit of obtaining a description of health related characteristics of an ethnic community – Bangladeshi migrants. It used non-weighted QoL instruments and a relatively simple sensitivity test. Despite these limitations, this study provides both baseline information about this community and statistically significant results with respect to the multi-instrument comparisons. Referring to the three aims of the paper, it provided an analytical comparison of the Bangladeshi community with the Australian community, and found that 91% of Bangladeshi migrants were highly qualified 12% unemployed and that the majority maintained family ties and ethnic cuisine. Very few drink alcohol, virtually no women and few men smoke but a higher proportion have 'high' or 'very high' levels of psychological distress and are overweight. The paper explored different aspects of the Bangladeshi community, focussing in particular on the process of social adaptation, finding that this is multifarious and in terms of progress non-uniform. Finally, it compared the effectiveness of a number of multi attribute instruments for measuring the quality of life among Bangladeshi migrants in Australia. Of the four instruments designed for economic evaluation studies, the (Australian) AQoL-8D and SF-6D outperformed the EQ5D and HUI3. The AQoL-8D correlated most highly with psychological scales of life satisfaction.

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