MEASURING THE QUALITATIVE ASPECTS OF A RECONSTRUCTION PROGRAMME: ACEH, INDONESIA

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Abstract

Aid Agencies are accountable for the funds that they administer and consequently there is a reporting requirement to demonstrate that any intervention (such as a permanent housing program) is beneficial to those that the Agency seeks to assist.

The WHO Quality of Life Tool (WHO QLT) is one such measure of well being and has been extensively used since it was developed in 1996 (predominantly in the health sector). However, it does requires a before and after study to produce results. This is not necessarily problematic but the paper reports on the application of the Depression, Anxiety, Stress Survey tool that consists of 42 questions (hence its name DASS42) as part of a shelter program for the West Coast of Aceh following the December 2004 tsunami. The advantage of the DASS42 is that it can quantify results based on one survey (Lovibond, 1995). The DASS42 was developed at the University of New South Wales, Australia and while it enjoys wide acceptance this was the first time it was applied to a shelter program.

The results from the DASS42 can be used to prioritise beneficiaries and when combined with the Disaster Life Continuum Model (rather than a 4 R Model) provides insights into the psycho-social status of beneficiaries. The paper outlines how the DASS42 was used to quantify the impact of the tsunami disaster in terms of gender, age and resilience of the Acehnese people. The survey was completed by 600 respondents at 5 different locations along the West Coast during the first two weeks of March 2005, less than 3 months after the tsunami.

Keywords; DASS42; Aceh; survey; well being; quantitative; qualitative; indicators.

INTRODUCTION.

Ask any person involved in a large disaster "how they are" and they will no doubt answer negatively. Ask them again some months later and one would hope for a less negative response but would not expect a completely positive reply. The challenge to measure that change of well being or quality of life is central to the process of providing aid and assistance. Any assistance should produce a positive increase in that well being or quality of life (QOL). To date, hard quantitative indicators such as families housed, children receiving education, livelihood skills training given and health indicators have been used (UNDP, 2004). And this paper suggests that these hard quantitative measures need to be extended to cover softer qualitative issues with quantitative measures.

QOL is difficult to completely define. Wikipedia defines well-being or quality of life of a population as "…an important concern in economics and political science. There are many components to well-being. A large part is standard of living, the amount of money and access to goods and services that a person has; these numbers are fairly easily measured. Others like freedom, happiness, art, environmental health, and innovation are far harder to measure. This has created an inevitable imbalance as programs and policies are created to fit the easily available economic numbers while ignoring the other measures that are very difficult to plan for or assess." (Wikipedia, 2006). The discussion about the meaning of the QOL dates back to Aristotle who defined it in terms of "eudaimona" or "happiness".

Not surprisingly there are now many indicators or composite measures of well being.

Sharpe's report that reviewed 38 such QOL indicators noted that "…Historically almost all indicators of well-being have been based on objective data. In recent years, the importance of subjective well-being, also called happiness or life satisfaction, has grown and a number of national indexes in these areas, such as the Australian Unity Well-Being Index, have been developed." (Sharpe, 2005).

However, many of these indicators are intended to measure (and compare) national well being and moreover in developed OECD countries and consequently would not be useful in the constantly changing context that is post disaster reconstruction in developing countries (OECD, 2006).

In discussing this dynamic Hallam suggest that "..evaluations should comment on the impact of humanitarian aid programmes, and not focus solely on monitoring the efficiency of project implementation. However, humanitarian programmes often take place in complex, confused circumstances, where plans change regularly, where information is scarce and where little is predictable. As a result, qualitative and deductive methods of measuring impact, that involve beneficiaries, are likely, in general,

to be more appropriate than methods that seek to be 'scientifically rigorous'. (Hallam 1998). The importance of community involvement and the need to have "an approximate measure of the right things is more meaningful than an exact measure of the wrong things" approach is also supported by Malcolm (2006).

Mayne has taken this process one further step by developing Contribution Analysis as reported by Poletti (2004). "…good evaluations have always dealt with the issue of causality in a pragmatic way. It may not be possible to prove causality, but it is possible to suggest reasonable causal links, which can then be used as a basis for informing changes to programmatic design. John Mayne, from the Canadian Auditor General's Office, has developed an analytic framework based on this pragmatic approach which clarifies how performance measures can be used to examine causal links and attribution. Contribution analysis, the name of his suggested approach is pragmatic and aims for better (as opposed to perfect) information with which to make a case for plausible (as opposed to proven) associations"

The need to incorporate QOL factors within development programs is also recognised in the building literature. For example part of step 4 in a 10 step suggested process for local holistic recovery is "..determining what quality of life concerns are important to local residents, before and after the disaster" (Monday, 2002).

However, the need for QOL factors is more often hidden behind the concepts of community participation, protection, integration, evaluation, monitoring, effectiveness and coordination. (UNHCR, 2000), (Sphere, 2004).

Given the above context how can QOL factors be included into a reconstruction program?

MEASURING THE QUALITY OF LIFE.

The most widely known and readily available survey tool is the World Health Organisation (WHO) Quality of Life tool (QLT). It has had extensive use in examining the QOL aspects of health related interventions and while it is suitable for architectural and physical engineering and planning interventions its predominant use remains in the health sector (Hawthorne et al, 2002). It consists of 100 questions in the standard version (25 questions in a brief version) and is a comprehensive self assessment of the individual's QOL. This is defined as ""an individual's perception of his/her position in life in the context of the culture and value systems in which he/she lives, and in relation to his/her goals, expectations, standards and concerns. It is a broad-ranging concept, incorporating in a complex way the person's physical health, psychological state, level

of independence, social relationships, and their relationship to salient features of their environment" (WHOQoL, 1994).

The DASS42 on the other hand, is relatively new survey tool and was developed at the University of New South Wales, in Sydney Australia (Lovibond, 1995). It is a "set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress" and was "constructed not merely as another set of scales to measure conventionally defined emotional states, but to further the process of defining, understanding, and measuring the ubiquitous and clinically significant emotional states usually described as depression, anxiety and stress" (DASS, 2006). The characteristics of high scorers on each DASS scale are as follows:

- Depression scale: self-disparaging, dispirited, gloomy, blue, convinced that life has no meaning or value, pessimistic about the future, unable to experience enjoyment or satisfaction, unable to become interested or involved, slow, lacking in initiative.
- Anxiety scale: apprehensive, panicky, trembly, shaky, aware of dryness of the mouth, breathing difficulties, pounding of the heart, sweatiness of the palms, worried about performance and possible loss of control.
- Stress scale: over-aroused, tense, unable to relax, touchy, easily upset, irritable, easily startled, nervy, jumpy, fidgety, intolerant of interruption or delay.

The two approaches are compared below in table 1.

Table 1: Brief Comparison of the WHO QLT and the DASS42 Survey Tools.

WHO Quality of Life Tool **(Hawthorne, 2003)**	**DASS42 (DASS, 2006)**
Set of 100 questions in the standard version and 25 in the Brief version. Measures an individual's physical health, psychological state, level of independence, social relationships, and their relationship to salient features of their environment.	Set of 42 questions in the standard version and 21 in a light version. Measures an individual's level of depression, stress and anxiety.
Several language versions available Is well known and tested.	Some language versions available. Relatively new but robust survey tool in that it is relatively insensitive to missing answers.
Requires a before and after study.	Requires one survey.

However, the DASS42 has the distinct advantage of not requiring a before and after survey and it achieves this with what it calls the "severity" table.

THE SEVERITY TABLE.

This aspect of the DASS42 survey allowed immediate rating of responses thus making the DASS42 a useful survey tool for the complexity that is the humanitarian context. The Severity Table, its rating and the associated DASS42 scores in each of the three scales are shown below in table 2. And hence, comparisons within and between the 5 different communities studied along the West Coast of Aceh could be rapidly completed.

Table 2: The DASS42 Severity Index Table (Devilly, 2005).

	Depression	**Anxiety**	**Stress**
Normal	0 – 9	0 - 7	0 – 14
Mild	10 – 13	8 – 9	15 – 18
Moderate	14 – 20	10 – 14	19 – 25
Severe	21 – 27	15 – 19	26 – 33
Extremely Severe	28+	20+	34 +

THE DISASTER LIFE CONTINUUM (and the DASS42)

The most commonly used disaster model is the 4R model where the "R"s stands for Reduction, Readiness, Response and Recovery (MCDEM, 2004). It is a linear model with one phase leading to the next through the disaster. However, aid workers find such a model limiting in terms of what is seen in the field and other models such as the Disaster Life Continuum (DLCM) are more widely used (EMA, 2003). The DLCM is graphical represented in figures 1A and 1B below.

Disasters impact differently on people and families. The effects are sometimes immediately noticeable and other times can be held back and appear months after the disaster event. "The traumatic experience is so usual that the individual who undergoes it lacks a basis in previous experience to understand it" (EMA, 2003 pg 49). As illustrated in figure 1A the past is a line that extending into the present with a second line representing the future also extending into the present. The two lines are linked by a third line representing the plans and decisions an individual makes relative to the social context they enjoy. When disaster strikes (figure 1B) this protective family and

social context disintegrates and the lines of future and past are disconnected with the loss of the ability to plan and make decisions. The affected individual initially feels unable to relate to the future or leave the past behind. This is shown by the past line folding back on itself under the preoccupation and fixation of life before the disaster. They are unable to deal with the present. The line of the future also folds back as the realisation and the sense of disruption to their life's plans sinks in. This creates anxiety and despair about what the future may hold. Thus a recovery and reconstruction strategy needs to allow for this trauma and address the need for a social network so as to move the community from figure 1B eventually back to the socially sustainable condition of figure 1A.
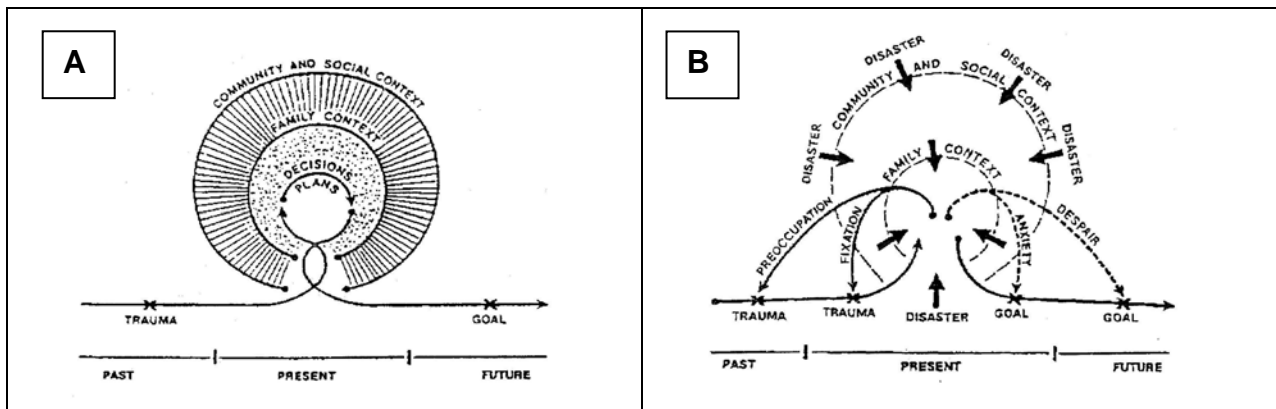

Figure 1: The Disaster Life Continuum Model. (DLCM)

The link between the three lines of the past, present and future in the DLCM and the depression, stress and anxiety scales of the DASS42 maps the resilience of the community concerned. For example, the past and present are predominantly the depression and stress scales of the DASS42 while the future is predominantly the anxiety scale and the relative severity rating between depression and stress compared to anxiety maps resilience in terms of reconnection the past and future.

In addition, such an exercise also maps the location of the community between conditions B and A of the DLCM (as shown in figure 1 above) and with successive surveys it would be possible to trace the reconstruction path the community has embarked on.

Thus, combining the DASS42 and the DLCM allows new metrics within reconstruction programs.

SURVEY FRAMEWORK

Surveys at field offices along the west coast were undertaken with 100 people interviewed in the towns of Lamno, Calang, Krueng Sabe and Tenoum. In Meulaboh 200 people were surveyed because it was a larger city. The surveys were completed by a local NGO called Mapala using teams of 5 people that included at least two women team members. This gender balance was felt to be important because of the concern that women may not talk as candidly with a male as opposed to a female interviewer.

A pilot of the survey was trialled in Banda Aceh and this brought out that many of those completing the survey would not be able to read and that most would converse in Acehnese instead of the national language of Bahasa Indonesia. Consequently, the survey was read out to individuals and their replies marked on the survey sheets by the interviewer. The pilot also resolved issues of understanding and agreement about the translation between interviewers.

Furthermore, training of the team members involved was undertaken so that there was a level of uniformity of survey process, inquiry and data taking between the 3 teams involved. Communication between the teams and back to Banda Aceh would be difficult once they were in the field. And hence, issues needed to be resolved prior to departure. In addition, field living conditions were basic and the work physically and emotionally demanding. It would be problematic for the team should one of the team members require to leave prematurely.

RESULTS

The results from the DASS42 created a baseline survey that was surprisingly consistent through out the 5 locations of the West Coast. Three main issues were addressed and these are discussed in detail below.

How resilient were the Aceh people?
Cardona defines a lack of resilience as a lack of "capacity to confront or absorb the impact of dangerous phenomenon" (reported in Wisner, 2003 pp8). This inverse definition follows a trend to express vulnerability as the inverse of resilience rather than resilience directly.

The overall DASS42 results for the 3 scales of depression, stress and anxiety are tabulated in table 3 below. These are the averaged values for all the individual surveys completed in that area together with its severity rating from table 2 above. The overall results rated anxiety as severe while depression and stress were normal. This suggests as discussed in the DLCM above that the Acehnese people had (to an extent) contained the immediate effects of the tsunami and their main issue was what did the future hold? And this was an area where aid agencies could assist through housing programs, education and livelihoods.

Moreover, given that this was only 3 months after the tsunami suggests that these were resilient communities. This insight assisted many agencies in their planning and strategising of programs.

Table 3: DASS42 Overall Results

	Lamno	Calang	Krueng Sabe	Tenoum	Meulaboh 1	Meulaboh 2	Overall
Depression	9.2 Mild	8.2 Normal	9.0 Normal	12.0 Mild	8.8 Normal	10.4 Mild	Normal
Anxiety	15.0 Severe	14.8 Severe	15.2 Severe	17.0 Severe	13.8 Moderate	15.6 Severe	Severe
Stress	14.8 Mild	10.7 Normal	11.4 Normal	16.1 Mild	11.1 Normal	13.5 Normal	Normal

Despite the consistency of the results in table 3 above there were three locations that differed from the others; namely Lamno, Tenoum and Meulaboh 2. Of these Tenoum is most significant with Lamno and Meulaboh 2 just slipping into "mild" from "normal". And it is not clear why there is such a difference for Tenoum? In terms of gender and age it is between upper and lower values for other areas. And in terms of building/ infrastructure damage suffered less damage than Calang or Krueng Sabe villages which were 90-100% destroyed. It was however, one of the last areas to receive aid and is inland thus hampering any assistance via boats. In addition, 80% the west coast highway and over 247 bridges were washed out (many of these bridges were in the flat plains between Tenoum and Meulaboh) making access into Tenoum problematic. The figures in table 3 above could suggest that Tenoum has missed out on aid and resources compared to the other areas of the West Coast. More investigation and a field trip to assess the situation in Tenoum would have been warranted. Finally it is interesting to note that Meulaboh 1 had the lowest level for anxiety.

The implications for a reconstruction program were as follows:
- The need for permanent housing rather than transitional housing or barrack style Transitional Living Centres (TLC's)
- The provision of permanent housing as soon as practicable after the emergency phase. In Aceh the emergency phase was approximately 3 months long (emergency tents), the recovery phase 18-24 months (transitional shelters and TLC's) and reconstruction 10-15 years (permanent housing).
- The need to use the reconstruction program to kick start local economies.
- The need to buy locally and to use local expertise and skills in as much as possible.

While such conclusions are typical of many reconstruction programs the quantitative basis of the decision provided by the DASS42 survey was new and moreover the baseline data provided by theDASS42 survey could be the basis for further research and monitoring.

What is the impact of age?

The UNHCR Handbook list "vulnerable people" as those that are sick, mentally incapacitated, the elderly, children and women head of households (UNHCR, 2000 pg 7). And no real differences were expected from that list for the situation in Aceh. However, table 4 below suggests that the impact of the disaster was felt more by the young than the old. In all areas and for all the DASS42 indicators (except for Tenoum) the young (those under 30 years of age) were more vulnerable than the old (those over 50 years of age). Moreover, the severity peaked for those under 30 and reduced steady through the 30 to 39, the 40 to 49 to those over 50 years of age. This was a consistent pattern throughout the west coast.

This is interesting and it could be that those over 50 years are perhaps the most vulnerable while those under 30 are the most exposed? This distinction is part of the risk equation which is as follows (Masure, 2003, pp3):

Risk = Hazard probability x Exposure value x Vulnerability

Exposure represents the global value of elements at risk in a territory
Vulnerability represents the fragility of the elements at risk of the territorial system.
Both expressed on a scale from 0 (no damage) to 1 (total loss).

Table 4: DASS42 Results for Age.

Age (in years)	Lamno	Calang	Krueng Sabe	Tenoum	Meulaboh 1	Meulaboh 2	Overall
Depression							
Less than 30	9.8 Mild	10.4 Mild	11.3 Mild	11.3 Mild	11.4 Mild	10.5 Mild	Mild
30 to 39	9.3 Mild	8.6 Normal	8.8 Normal	12.4 Mild	10.5 Mild	11.2 Mild	Mild
40 to 49	9.6 Mild	7.4 Normal	8.5 Normal	12.5 Mild	8.0 Normal	11.3 Mild	Normal
50+	10.7 Mild	7.1 Normal	8.1 Normal	8.8 Normal	8.4 Normal	9.1 Mild	Normal
Anxiety							
Less than 30	15.7 Severe	17.2 Severe	18.7 Severe	20.3 X Severe	18.4 Severe	17.9 Severe	Severe
30 to 39	16.2 Severe	15.5 Severe	15.4 Severe	17.3 Severe	14.3 Severe	15.7 Severe	Severe
40 to 49	13.8 Moderate	13.7 Moderate	13.8 Moderate	16.4 Severe	16.0 Severe	14.6 Severe	Moderate
50+ Years	20.8 X Severe	13.4 Moderate	13.9 Moderate	12.4 Moderate	12.6 Moderate	16.4 Severe	Moderate
Stress							
Less than 30	16.0 Mild	12.4 Normal	13.9 Normal	18.4 Moderate	14.4 Normal	14.9 Normal	Normal
30 to 39	16.3 Mild	10.9 Normal	11.1 Normal	16.0 Mild	11.9 Normal	13.9 Normal	Normal
40 to 49	14.2 Normal	9.8 Normal	10.5 Normal	16.4 Mild	11.7 Normal	14.3 Normal	Normal
50+ Years	13.0 Normal	10.3 Normal	11.4 Normal	10.9 Normal	10.7 Normal	12.6 Normal	Normal

The results are again consistent for all 5 areas along the West Coast with variations in Lamno, Tenoum and Meulaboh 2. Apart from the X severe anxiety rating for those over 50 years in Lamno (based on a sample size of only 6 people over 50, the smallest sample for this analysis of the impact of age) it is again Tenoum that has generally

elevated ratings. The higher ratings for Lamno and Meulaboh 2 reflect a high percentage of females surveyed in both areas. Disasters are gender biased and impact on females more than males (discussed in the next sub chapter) and hence the increased DASS42 scales for both these areas (Lamno had 62% female respondents and Meulaboh (2) 66%). However, this was not the case in Tenoum which had 55% female respondents.

The implications for a reconstruction program were as follows:
- Elderly people would remain a priority for housing provision (along with the other vulnerable groupings) but where ever possible local trades people and skills would be used. In addition, livelihood training and capacity skills should be available for those under 30 in particular but for anyone willing to work. Such an approach would address the vulnerability and exposure issues raised above.
- Housing programs should integrate the other aspects of a community and in particular business, education and social contacts. This in part is supported by the DLCM as well as addressing the exposure risk for those under 30.

These conclusions are again typical of many reconstruction programs. But the quantitative basis and the ability to monitor these aspects changes allows further progress to be achieved.

What is the impact of gender?

There had been discussions amongst aid workers in Aceh as to the gender impact of the tsunami; did it affect females more than males? The experiences of many suggested that females were affected more than males but there was no quantitative evident and it remained a matter of opinion. The DASS42 figures quantified this gender bias showing that the tsunami did affected females significantly more than males. The results from the DASS42 survey are tabulated in table 5 below and show that that the impact of the tsunami is typical one scale higher for females compared to males in all 3 of the DASS42 measurements. This was consistent throughout all 5 locations in the West Coast including Tenoum which as discussed above had higher DAS42 ratings than the other 4 locations.

The role of females in disaster reduction has been identified previous (Wisner, 2005). And the role females can play in rebuilding houses in Aceh (WDB, 2005). Thus, it is essential that reconstruction programs seek out female participation.

Table 5: DASS42 Results for Gender.

	Lamno	Calang	Krueng Sabe	Tenoum	Meulab. 1	Meulab. 2	Overall
Female							
Depression	9.2 Mild	10.8 Mild	10.3 Mild	14.1 Moderate	12.3 Mild	12.8 Mild	Mild
Anxiety	16.1 Severe	17.9 Severe	18.2 Severe	21.7 X Severe	18.8 Severe	17.7 Severe	Severe
Stress	16.5 Mild	13.2 Normal	13.6 Normal	19.3 Moderate	15.3 Mild	15.4 Mild	Mild
Male							
Depression	9.1 Mild	5.7 Normal	7.8 Normal	9.3 Mild	7.0 Normal	6.6 Normal	Normal
Anxiety	12.9 Moderate	12.0 Moderate	12.4 Moderate	11.1 Moderate	11.2 Moderate	12.8 Moderate	Moderate
Stress	12.2 Normal	8.2 Normal	9.4 Normal	12.1 Normal	8.8 Normal	10.9 Normal	Normal

WHAT DID THIS MEAN FOR THE SHELTER PROGRAM?

The DASS42 survey quantified many (crucial) details that would not have otherwise been included. It gave validity to the notion of early reconstruction, the impact of age and quantified the greater impact of tsunami on females. The DASS42 survey indicated the following:

- The need for permanent shelter soon (3 months) after the tsunami disaster.
- The need for an integrate community approach
- The need to target traditional "vulnerable groups" and in particular women and those under 30 years of age.

While these results are not "shattering" the ability to speak "quantitatively" and fine tune aid programs was invaluable. Moreover, there is potential to use the DASS42 (together with other indicators, interviews and information) for issues of accountability and transparency. The ability to have quantitative and qualitative measures is extremely attractive.

CONCLUSION

The DASS42 survey is a particularly useful tool for targeting shelter programs in disasters and emergency situations involving large populations. The use of the severity table, the Disaster Life Continuum Model and its ability to provide practical results based on one survey without the need for a before and after study make it a functional tool. In addition, the survey tool is freely available from the Internet thus increasing is serviceability.

Architects and engineers accustomed to the quantitative aspects of building should consider the need to quantitatively measure qualitative aspects of their projects. The difference between the quantitative and qualitative is the difference between a "house" and a "home". And while building shelter programs work to produce the first, it is the second that people desire.

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