# Chapter 5

## Building The Index

In this chapter, an orphan well-being index will be built based on theoretical foundations and real world findings. Before going on to discuss the final index of orphan well-being in Myanmar, the underlying situation of the orphans in Myanmar will be stated. In this section, orphan well-being is defined and present the main approach to developing the indicators, and give the domains which were covered in the definitions of the well-being of orphan, and finally select the indicators which constituted each domain. In this case, we will focus mainly on a group between five and seventeen years of age.

### 5.1 Defining an Orphan's Well-Being

In Myanmar, most orphanages were run by faith-based and private organizations at the time of my research. Thought they were called private organizations, formally they were under a faith-based structure. The Government ran some orphanages and schools, but this was not sufficient because those schools had a limited number of children and the admission policy was very strict. Non-government institutions had a large number of children, since their admission policy was not very strict. Among the faith-based organizations/orphanages, it was found that the monastery-based orphanages had a larger number of children, because normally the monks accepted the children, whether poor, fatherless, motherless or a double orphan.

Since Myanmar is one of the major countries where Theravada Buddhist tradition is predominant, the monks played in important role. The Buddha's teachings on the roles of monks can be stated as follows.

The Buddha's teachings on the responsibility of monks towards the community say that a monk's duty is three-fold:

1. Khanda dhura, vipassana dhura: To develop his knowledge through study and meditation
2. Jarata bhikkhave jaritham phahuchanhitaya phahuchansukhaya lokanukampaya attaya hitaya sukha tevamanussanam: To wander from place to place teaching for the well-being, the happiness of gods and men
3. Sangham saranam gaccami: To serve as a refuge in times of suffering.

Source: Coded from Maund L. and Matta, S. 2006, A Buddhist Approach to HIV Prevention and AIDS Care, p.33

Buddhism does not directly teach its clergymen to take responsibility for the people's financial needs, political affairs or other physical matters. What it is focused on is people's mental well-being, which it says is a basic cause for the whole world's happiness and suffering. According to Buddhism there are two types of suffering: physical and mental. Physical suffering can be cured by means of physical medication, while the latter needs a mentally healthy environment, basic spiritual knowledge, wisdom, and at the highest level, enlightenment. Once a man mentally suffers, he is harmful not only to himself, but also to those who are related to him. What it focuses on is people's mental well-being (good or bad) by suffering. It does not mean only one individuals misery, but the consequence on the whole world of his misbehavior. In the case of operating orphanages, there are five main objectives that

the monks implement, which are, to provide food and shelter, to educate, to provide a healthy environment, to provide mental strength for the child and to give warm living-kindness to the children. By fulfilling these objectives, Buddhist monks act as a refuge in times of suffering. Educating the children is not only aimed at the children's life development, but also as an alternative way to support the children in understanding the teachings of Buddha. In order to understand what is suffering and why people feel suffering, the Buddhist's monks cement an intellectual foundation for the people. This is one of the alternative approaches for reaching enlightenment.

In the monastery-based orphanages, the maximum number of children was around 300 and the monks had to struggle to bring up this number of children. In the church-based institutions, the number of children was mostly around 50, as it was in the private institutions. The Christianism to child welfare was stated as follow.

"Religion that God our Father accepts as pure and faultless is this: to look after orphans and widows in their distress and to keep oneself from being polluted by the world."

Source: Coded from James 1:27, Scripture taken from the HOLY BIBLE, NEW INTERNATIONAL VERSION®. Copyright © 1973, 1978, 1984 International Bible Society. from http://james127.com/ . Retrieved at 12.3.2009.

In accordance with this saying, the Church-based institutions provide the vulnerable children food, shelter, formal and religious educations and warm loving-kindness.

In the institutions, given that the main reason why the children visited them was due to poverty, 70 percent of the occupants were poor. Within this situation we need to define 'poor'. Even though these children were poor, they were not disease affected, which could be found in some African countries. 'Poor' meant poor in terms

of the lack of education in their villages and poor enough not to be able to support them for schooling and for food. These children came from a remote part of Myanmar, where the transportation and education systems were not well-developed. Their parents could not earn enough money in their daily income to support their children fully, because they had to work in the fields cultivating and farming, or worked on plantations or in seasonal jobs. For the education of their children was the second key reason why the parents sent their children sent to the institutions located in the cities. In some villages there were only primary schools, or possibly a secondary school. Due to a lack of teachers or facilities, these schools were not able to provide for the children satisfactorily. As a result of these substantive reasons, the parents sent their children to the institutions. The institutions provided the children with shelter, food and education, and were not run for profit. The definition of the well-being of an orphan in Myanmar was not like it is in other situations. If the children were safe, healthy, happy and could be educated by living in institutions, it was considered that these children's well-being had been improved, because living in the institutions was seen as somewhat better than their life living in their own villages, even though they were then apart from their parents and families.

### 5.2 The Main Approaches used to develop an Index

According to the definition of orphan well-being seen above, the main approach to measuring the well-being of orphans is to state the underlying situations of their well-being, based on an assumption of their basic needs in their respective orphanages. Since there have been three main approaches used to measure well-being, the data driven approach with applicable theories will be used in terms of the situation

in Myanmar. The reason why we will use this data driven approach, is that according to the primary survey, it was found that:

1. records were rarely maintained in all of the institutions, and that
2. no primary survey had been conducted previously in this field.

In this data driven approach, there had to be two criteria met in order to fulfill the data requirements, which were:

1. the data had to be reliable, and
2. the data had to be able to cover the necessary conditions of the well-being of the orphans.

The lack of reliability of the data itself meant that the indicators used to build the index had to be reliable. As a result, we did not take account of the indicators which were not reliable, even though they were sometimes somewhat important with respect to the theories. Data unreliability was a serious problem when investigating the result. By taking the indicators which satisfied the definition of the well-being of orphans (meaning the orphans should be healthy, happy, were educated and safe), the second criteria could still be fulfilled.

**5.3 Domains and Indicators**

Many people and many countries have produced domains and indicators based on their own definitions of child well-being and their approaches to finding it. In the European Union well-being index for children (UNICEF 2007), the index was constructed using eight clusters: the material situation, housing, health, subjective well-being, education, children's relationships, civic participation, and risk and safety. In the 'local index of child well-being in England', material wellbeing, health, education, crime, housing, environment and children (at risk of being) in need,

were used as the main domains (Bradshaw, Bloor, Huby, Rhodes, Sinclair, and Giobbs, 2009). Based on the objectives and approaches of the researcher, domains and indicators might differ.

In the case of Myanmar, the criteria used to select the domains and indicators differed, because the children covered in the study were orphans living in the institutions. Furthermore, the main objective of building the orphan well-being index was to aid the primary investigation of the well-being of the orphans, when a primary investigation in this field had never been conducted in the country as a whole.

Material well-being is generally one of the important indicators for measuring the well-being of children. However, in the Myanmar situation, material well-being could not be taken an account. Based on the primary survey, it was found that the institutions had almost the same material conditions as the owner's properties. Since these institutions were non-profit, they had no opportunity to earn regular income. Some Church-based institutions received a subsidy from the Christian Association, but it was not sufficient. The monastery-based institutions were mainly dependent on donation money, apart from some institutions which had income generation programs. In Myanmar, one of the methods used to distribute income from the rich to the poor was in the form of donations. Under this situation however, they could not provide for the children sufficiently. Material well-being did not vary much among the orphans under these conditions.



In European countries, crime and risks factors have been used as important dimensions of child well-being. In the case of Myanmar, these factors could not be taken into account for the following reasons. According to my primary survey, and from interviews held with the children and the heads of the organizations:

1. Children who smoked cigarettes, drank alcohol and participated in physical fighting were not found in each of the institutions.
2. Sexual abuse cases were not found in each of the institutions.
3. Children who had ever committed crimes were not found in each of the institutions.

This may have been because of the good management system of the religious institutions and the discipline that they instilled, or that the children were sufficiently poor not to commit risky behavior like drinking alcohol or smoking cigarettes.

Civic participation is defined as young people's participation in civic activities such as student councils, youth organizations, environmental organizations, human rights organizations or charities and the collection of money. In the situation of orphans however, it is difficult to measure these indicators, because such types of organization are not well developed. As a result, using an indicator covering civic participation was not relevant for use in the model here.

In accordance with the above, the well-being of orphans was measured using three dimensions, these being the physical, emotional and educational. In this case, the assumption of the model was to give the primary investigation of the well-being of the orphans with reference to definition of orphan's well-being itself, when primary investigation in this field has never been conducted country as a whole. Depending on the assumption of the model, any detailed consideration to these indicators had not given, and used only the most reliable indicators, indicators that covered the general well-being of the orphans in a situation such as that in Myanmar.

In the domain of physical well-being, children's nutritional status, their sickness, hunger, accident levels and death rate were measured as indicators. Emotional well-being was measured using indicators of a child's happiness in school, happiness in the orphanages, and their relationships with their peers. Educational well-being was measured using indicators of achievements in reading and writing, of mathematical skills and achievements in science. In this case, physical and educational well-being were measured objectively, and emotional well-being was measured subjectively and utilizing the observational skills of the researcher. These three dimensions and their indicators covered data reliability and basic needs criteria, which provided the assumption that orphans should be healthy, happy, educated and be safe living in the respective institutions.

### 5.4 Measuring Indicators

To measure the indicators, we provided the most reliable and objective methods, because of the real world situation in which the evidence, records and information was insufficient.

#### (a) Physical Well-Being

The physical well-being measurement was made up of six indicators: nutritional status, hunger, the sickness occurring within one month, the number of children hospitalized within one year, the number of children who had an accident within one month and death rate with one year of the orphanage.



#### 1. Nutritional Status

The nutritional status of the children was important in showing their state of physical well-being. In a UNICEF (2007) report, the percentage of children who were overweight was used as one of the health indicators to reflect the

well-being of children. In the case of Myanmar, obesity was not an appropriate indicator to reflect the health status of a child, so we had to measure the level of malnourishment found amongst the children. However, the objective of measuring the malnourishment of orphans in this situation was quite different from the aim of the nutritional research that has been used in African countries, disease affected areas, or other less developed countries. Most nutrition research has been conducted to investigate mortality rates amongst children experiencing malnourishment. In the situation of the orphans living in institutions in Myanmar, there was no child who had died from malnourishment, according to the primary survey. This may have been because of the fact that these children were mostly above five years old. Malnourishment was a critical problem in younger age groups. Furthermore, there has been no nutrition survey conducted in the above five age group category of children in Myanmar as a whole. In this model therefore, malnourishment was used to investigate the health status of the children.

Adapting inadequate diets can reduce the physical activity and growth rate of the child. Three approaches to measuring nutritional status have been used previously; assessing the clinical signs of malnutrition, biochemical indicators and anthropometry. Biochemical and clinical indicators are useful only at the extremes of malnutrition, where body measurements are sensitive over the full spectrum (Go'mez, Tamos, and Cravioto, 1952). Furthermore, biochemical measurement need laboratory facilities, costly equipment and highly qualified staff, in order to interpret the tests and the protocols for collecting, storing and transporting specimens and for reporting results. In a field-based research situation, these requirements of the biochemical methods are unsuitable for investigating nutritional

status. Clinical indicators are assessed through the investigation of physical signs and the symptoms of malnutrition, by highly qualified clinical staff. In the clinical assessment, slow growth and development are examined by comparing an individual or a group with normal values on growth charts, such as the pallor of the skin, mucous membranes of the mouth and eyes, nail beds or palm surfaces, and changes in hair color and body appearance (which are the serious signs of protein-calorie malnutrition) as by edema (Am J Public Health 63: 1973). Clinical assessment requires highly qualified clinical staff in order to provide reliable and valid results.

Anthropometric indicators are inexpensive, non-invasive and relatively easy to obtain. A number of anthropometric indicators are W/H, H/A, W/H, MUAC, MUAC/A and MUAC/H. According to the findings of the survey, the data on the ages of the children in the orphanages was not estimated to be reliable. No institution was able to show the birth certificates of the children. This is a big problem found in many developing countries. Weight-for-age and height-for-age are mostly used in nutritional research. For example, the z-score value of H/A is denoted as:

$$z = ( H_s - H_a)/\sigma_a \qquad (19)$$

where $H_s$ is the height of the study child and $H_a$ is the height of the reference child at age a, which increases with age, and $\sigma_a$ is the standard deviation of the height of the reference children at age a, which does not increase with age. W/A and W/H are defined similarly.



It can be seen that when the ages in the study are not reliable, the z- scores value will also no longer reliable. Growth references are specifically calculated every one month.

In the situation of the orphans in Myanmar, we provided MUAC-for-height or MUAC alone, as the indicators to measure nutritional status. Using MUAC alone with a QUAC stick was a more accurate and rapid method to use with large population, because it did not require the use of a table, or reference to a growth chart. The QUAC (Quaker Arm Circumference) stick avoided the use of a table, by having the MUAC thresholds defining malnutrition marked on a 'height' stick (Mei, Grummer-Strawn, Onis, and Yip, 1997). MUAC was measured by using a steel tape with the left arm hanging relaxed, midway between the tip of the acromion, and through the olecranon process, with the tape touching the skin but not compressing the tissue. This was measured to the nearest centimeter. The stick was placed firmly and uprightly on a platform against a vertical wall. The children then stood straight with their backs flat against the height measure. An MUAC measurement below -2 SD defined a moderate deficit, and below -3 SD, a severe deficit. If it was above -2 SD, there was no deficit. However when we measured MUAC, the important thing that we needed to make sure of, was to identify correctly the mid-point of the upper arm and not to pull too tightly on the tape. MUAC growth references suggested between 65cm to 145cm heights (which is defined as six months to 119 months in the WHO references).

MUAC-for-height was developed by firstly estimating the median MUAC values over a small range of heights. WHO used the exploratory data analysis line-fitting method and the data were divided into three subgroups based on height. The median MUAC was calculated for each subgroup and a line fitted through these three summary medians. WHO used 6-cm wide height windows and subdivided these into 2-cm wide subgroups. The predicted MUAC determined at the midpoint of

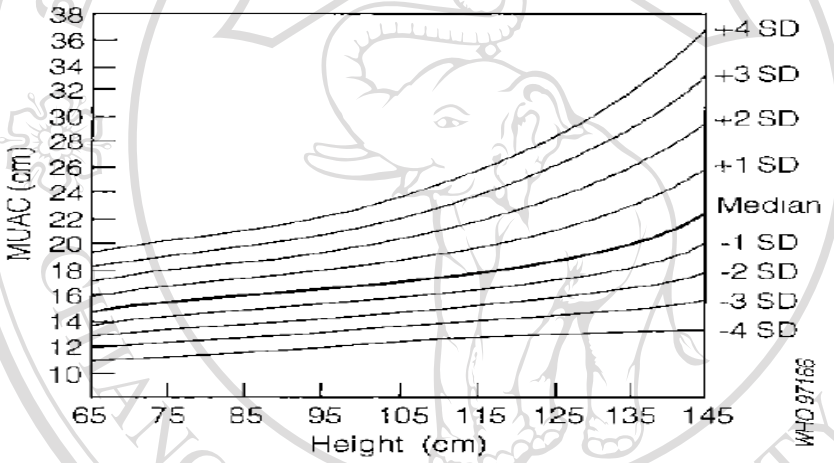
the height windows. In order to be smooth the median curve, the residuals of each data point and the standard deviation (SD) for each 6-cm window were calculated. The standard deviation was calculated as the square root of the mean squared error because of skewness of MUAC distribution. The upper SD was calculated separately using only the positive residuals and the lower SD was calculated by only using the negative residuals. MUAC-for-height curves were developed, one for boys, one for girls, and one for both sexes combined. MUAC-for-height references curves for boys, girls were stated at Figure 5.1 and Figure 5.2.

The use of anthropometry amongst adolescents is problematic and there is not data suggesting an MUAC which is age independent in this age group. The interpretation of anthropometric measures in adolescents is complicated by the changes in body composition, body shape and musculature that occur during puberty. In this study, we provided a MUAC measurement with a QUAC stick for the height group up to 145 cm with separate growth charts of boys and girls, in order to measure nutritional status. QUAC stick was shown in Figure 5.3.

The reason why MUAC is provided for measuring the nutritional status of children is because empirical evidence has been found in the field of nutritional studies, that MUAC can give a certain reliability and precision, and is independent of age. To obtain precise weight and height measurements in the field, three people are required (Frontiers, 1995). Two people are required to take measurements and the last one is required to supervise, record the measurements and to calculate the indicator values. The independence from the effect of age is classified using two components, the first being that the indicator value is not influenced by the age of the child, the second being that the predictive value (that is, the power of

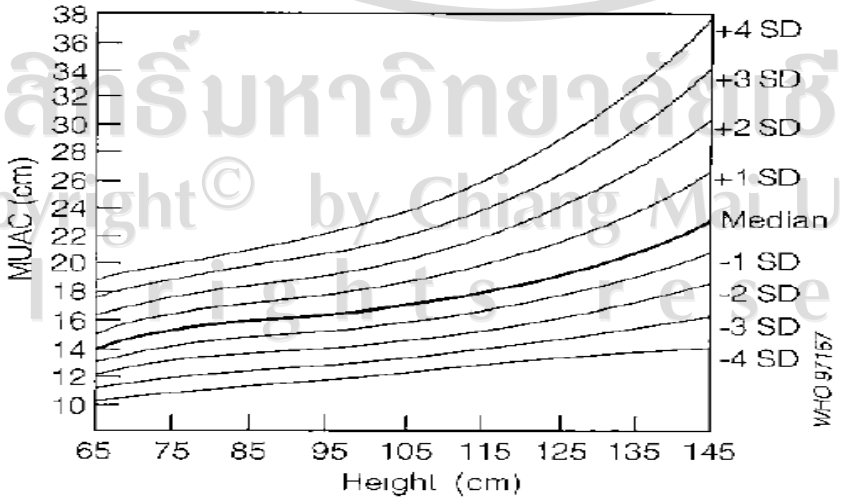
predicting mortality) of the indicator is independent of the age of the child. The predictive power of MUAC is independent of age, even in children below one year of age (Briend and Zimicki, 1986). Feeney (2004) found that in a study in Ethiopia, the majority of errors were made through the erroneous recording of MUAC values (for example, 102 mm recorded as 120 mm), rather than through deciding whether MUAC values fell above or below a threshold value. The recording errors did not have

Figure 5.1 MUAC-for-height References Curves for Boys of Height 65-145cm



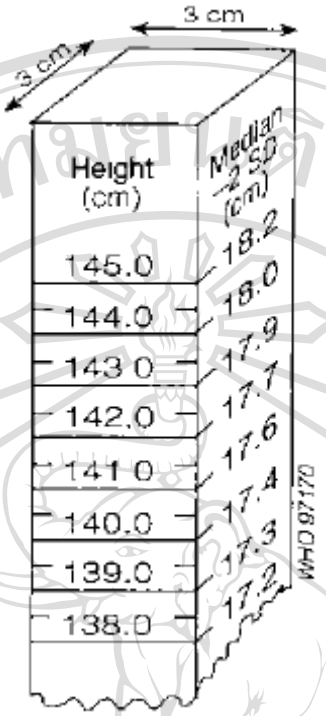

Source : Mei, Grummer-Strawn, Onis, and Yip, 1997, p.6

Figure 5.2 MUAC-for-height Reference Curves for Girls of Height 65-145 cm




Source : Mei, Grummer-Strawn, Onis, and Yip, 1997, p.6

Figure 5.3 WHO- Modified QUAC Stick




Source: Mei, Grummer-Strawn, Onis, and Yip, 1997, p.9

consequent problems, because the status of nutrition was decided by the threshold value. Chen, Chowdhury, and Huffman, (1989) studied the associations between anthropometric indicators and subsequent mortality rates in Bangladeshi children. The study showed that all indicators were negatively associated with mortality. Trowbridge and Sommer (1981) examined the sensitivity and specificity of indicators by using the data of Chen, Chowdhury, and Huffman (1989) and found that MUAC alone performed better than MUAC/H. Briend and Zimicki (1986) examined the validation of MUAC as an indicator of the risk of death within one, three and six months of taking the measurements of Bangladeshi children. This study reported that MUAC alone performed better in terms of both sensitivity and specificity than all the other anthropometric indicators studied in the same and in different populations.

Briend and Zimicki, (1986) also examined the power of W/A, W/H, H/A, MUAC, and MUAC/A for predicting mortality in children hospitalized with diarrhea in a Dhaka hospital. This study showed that W/A, MUAC and MUAC/A were the best univariate predictors of short term mortality. Alam, Wojtyniek , and Rahaman (1989) analyzed the use of MUAC, MUAC/A, MUAC/H, H/A, W/A and W/H, in order to predict the death after three and six months of study in Bangladesh. The study reported that the sensitivity at high levels of specificity was highest for MUAC and MUAC/A, immediate followed by W/A, H/A, and MUAC/H and was lowest for W/H. Briend and Zimicki (1986) found that the age-independence of MUAC was superior in terms of sensitivity and specificity to W/S, H/A and W/A in Senegalese children. The capability of common indicators with regard to key properties of case-detection methods for screening and for case detection of malnutrition in the community was shown in Table 5.1.

**2. Sickness**

Sickness of children is one of the most important facts of physical well-being. In the real world in Myanmar there were no records on the children's health progress or status, at any of the institutions. The only way to capture the health status of the children was to tap their memories and the memories of their managers or care-givers. According to these facts, sickness was measured by asking the children or their manager whether the children had been sick within the previous year with any disease For the orphanages as a whole, strong sickness was measured with the question "how many children have been hospitalized with any disease within one year?" These measurements taken by recalling their memories were quite reliable in the situation where no records existed. In this case we did not go into disease

Table 5.1 The Capability of Indicators with Regard to Key Properties of Case-Detection Methods for Screening and for Case Detection of Malnutrition in the Community

| Property | Indicators | | | | | | |
|---|---|---|---|---|---|---|---|
| | Clinical | W/A | H/A | W/H | MUAC | MUAC/A | MUAC/H |
| Simplicity | No | No | No | No | Yes | No | Yes (by QUAC stick only) |
| Acceptability | No | No | No | No | Yes | Yes | Yes (by QUAC stick only) |
| Cost | No | No | No | No | Yes | Yes | Yes (by QUAC stick only) |
| Objectivity | No | No | No | Yes | Yes | No | Yes |
| Quantitativeness | No | Yes | Yes | Yes | Yes | Yes | Yes |
| Independence of age | Yes | No | No | No | Yes | No | Yes |
| Precision (reliability) | No | Yes | No | No | Yes | Yes | Yes (by QUAC stick only) |
| Accuracy | No | No | No | No | Yes | No | Yes |
| Sensitivity | NA | Yes | No | No | Yes | Yes | Yes |
| Specificity | NA | Yes | No | No | Yes | Yes | Yes |
| Predictive value | NA | Yes | No | No | Yes | Yes | Yes |

Source: Prudhon C., et al. (2006) SCN Nutrition Policy Paper 21, p.15

specific and age specific illness, because of the reliability of the data and the scope of the model (which captured the general well-being of orphans).

**3. Hunger**

In terms of the orphans in Myanmar, it was also necessary to investigate hunger as one of the aspects of physical well-being. According to the field survey, some of the children in certain orphanages stated that they were hungry, but not seriously hungry, after meals or at the end of the day. When people lacked one single micronutrient alone or a combination of micronutrients, hidden hunger was presented. Micronutrient deficiencies can cause serious health problems, because they compromise the immune system by allowing infections to take hold. In this study, hunger was measured using a question which asked whether the child was hungry after a meal or not, and requiring a simple "yes" or "no" answer. This question covered all age groups, from five to seventeen years.

**4. Accidents**

The incidence of accidents is an indicator that measures the safety of children. In other countries' literature, accidents are usually found under the domain of risk and safety. In this study, we assumed that accidents represented the physical safety of the children. Since the children lived in institutions, they were not under the care of their parents. The institutions may not have been able to give close care and attention to each child, because there were many children in each of the institutions. Safety was measured using a question as to whether the child had had an accident within the previous month or not. This used the same assumption as for the sickness indicator, because if the child or manager was able to recall accidents, it was

likely to be within the one month period. This question covered all age groups, from five to seventeen years old.

**5. Death rates**

Death rate reflects the strongest evidence for whether the institutions can provide sufficient physical wellbeing to those children or not. The rate of death is measured in accordance with each orphanage. In this case, death with any diseases and cases within one year is taken into account.

**(b) Educational Well-Being**

In general, one of the most important reasons why children are placed under the care of institutions is because of education. The status of educational well-being is measured through test scores. In other countries, the enrollment ratio is one of the indicators used to measure educational status. In the case of the orphans in Myanmar, this was not a relevant indicator, because almost all of the children were enrolled in schools. To measure educational achievement by taking report cards or achievement test scores from school was also irrelevant, because it was difficult to get hold of report cards or test scores, and even if the tests scores could have been obtained from the school, they would have been bias. As a result of these reasons, the most reliable method to measure achievement test scores was to set an exam by researcher with reference to the grade of the children. Questions were set in accordance with the grade of the children, and the same questions were used in all the orphanages.



In the domain of educational well-being, the achievement test scores attained in reading and writing Burmese, mathematics and science were measured by the setting of an exam. Tests for reading and writing in Burmese were

important to test, because most of the children came from remote parts of the country and were from diverse ethnic groups. Their literacy levels in terms of reading and writing Burmese were therefore necessary and especially important for them. Mathematics and science skills would help to provide the level of development of the cognitive well-being of the children. Reading, writing and mathematics tests were set in all age groups. The science test was held for grades 9, 10 and 11, because these grades were more familiar with science than the lower age groups.

**(c) Emotional Well-Being**

Not only physical well-being is important, but also mental well-being, as it supports a child's overall well-being. In a report by UNICEF in 2007 (entitled 'Child Well-Being in Developed Countries'), the emotional well-being of children was defined under the domain subjective well-being, using the indicators: self-defined health, self-defined personal well-being and self-defined school well-being. Family, sibling and peer relationships were also associated with the emotional well-being of the children. In the case of the orphans in Myanmar, emotional well-being was measured using indicators covering happiness in school, happiness in their orphanages, and the relationships with their peers. Normally, self-defined happiness is measured with ordinal scales: very happy, happy, neutral, unhappy and very unhappy. Having three or more close friends was one of the indicators used to measure peer relationships, in the publication 'Health Setting for Young People in Canada' (Boyce, Matthew, and Roache, 2008).



In this study, we suggested that closed "yes" or "no" questions should be used to measure the happiness of the children, because the younger children could not state the exact utility level of their happiness or satisfaction, when they were

asked by ordinal scales, and according to the findings in the field survey. If they could not state the exact utility levels using ordinal scales, then questioning them in this way was no longer reliable. For the children above 10 years old, ordinal skill such as very unhappy, unhappy, neither happy nor unhappy, happy and very happy, should be used to measure emotional happiness. In this case, children who only said that they are happy or very happy or having positive feelings is determined as having good emotional wellbeing. Furthermore, it was not very reliable to decide the peer relationships of orphans using the number of close friends they had, because children normally state many friends as being in this category (according to the findings of the field survey). Therefore, the most reliable method was to not only ask the children whether they were happy at school or the orphanages, or had good relationships with their friends or not, but also by examining the researcher's observational skills when putting possibly positive or negative questions to the children. For example, positive and negatives questions are as follow.

(a) Positive questions

1. Are your friends kind and helpful to you?
2. Are your teachers kind and helpful to you?
3. Are your chiefs of the institutions kind and helpful to you?

(b) Negative questions

1. Do you have bad feeling about financial hardship?
2. Have you had discriminated among friends or at school or at the orphanages?
3. Do you miss your home all the time?

4. Have you had any punishment at school or at the orphanage?

These indicators then covered all ages.

Table 5.2 Domains and Indicators of Orphan Well-Being

| **Domains** | **Indicators** |
|---|---|
| a) Physical Well-Being | a1. Nutritional status<br>a2. Sickness within one month<br>a3. Hospitalized within one year<br>a4. Hunger after meal<br>a5. Accidents within one month<br>a6. Death rates within one year |
| b) Educational Well-Being | b1. Scores for Reading Burmese<br>b2. Scores for Writing Burmese<br>b3. Scores for Mathematics<br>b4. Scores of Science at grade 9,10,11 |
| c) Emotional Well-Being | c1. Happiness in School<br>c2. Happiness in the Orphanage<br>c3. Having a Good Relationship with Peers |



**5.5 Building The Index**

After defining all of the domains and their respective indicators, the orphanage well being index was built. This index was built to provide:

1. The overall and general well-being of the orphans with respect to their orphanages, and

2. An index value that could be used to compare results by orphanage, by type of orphanage and by region.

The orphan well-being index is a data driven index, because we chose the most reliable and readily available data in order to build the index. The index was built taking onto account three theoretical considerations of the causal indicator model.

**(a) The Nature of the Construct**

The domains or constructs of the model were determined by the use of a combination of available and reliable indicators. The changes in indicators could therefore cause changes in the domains (Borsboom , Mellenbergh, and Heerden, 2003/2004).

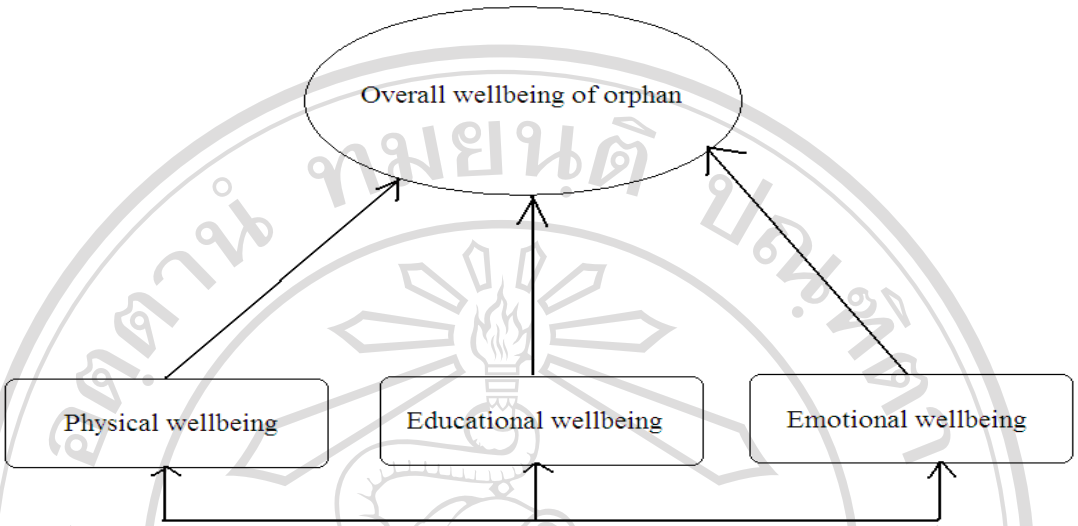
**(b) Direction of Causality**

The causality flows from the indicators to the construct, and the variations in the physical, emotional and educational domains do not cause variations in the indicators.

**(c) Characteristics of the Indicators**

Since the indicators made up of the constructs, and the indicators themselves, were chosen using the criteria of data reliability and availability, they did not need to have internal consistency or correlations, and did not require having the same antecedents and consequences. By adding or dropping an indicator, this may have changed the conceptual domain of physical, emotional and educational well-being.

Figure 5.4 Overall Well-Being of an Orphan




In order to provide, not only the overall well-being of the orphans in each orphanage, but also the rank order which could best decide the level of well-being (better or worse), we set all the indicators with the same indirections in the index. Also, the population was known in the model, so according to these assumptions, the domains, indicators and scale of the well-being index were as follows.

**(1) Physical Well-Being**

1. The percentage of children above z-scores of -2SD measured by MUAC with a QUAC stick (children's height under 145 cm)
2. The percentage of children who were not sick within one month
3. The percentage of children who were not hospitalized within one year
4. The percentage of children who said "I am not hungry" after a meal, and
5. The percentage of children who did not have an accident within one month.
6. (100- percentage number of death with any cases and diseases) within one year

**(2) Educational Well-Being**

1. The percentage of children who achieved in Myanmar reading test.

2. The percentage of children who achieved in Myanmar writing test.

3. The percentage of children who achieved in Mathematics.

4. The percentage of children who achieved in Science test at Grade 9, 10, and 11

**(3) Emotional Well-Being**

1. The percentage of children who were happy at school

2. The percentage of children who were happy at the orphanage, and

3. The percentage of children who had good relationships with their friends.

The overall well-being of the orphans was then defined as follows:

$$W = W_p + W_I + W_e \quad (20)$$

where,

W = the overall well-being of an orphan

$W_p$= the physical well-being of an orphan

$W_I$ = the educational/intellectual well-being of an orphan

$W_e$ = the emotional well-being of an orphan

The orphan well-being index was built by summing the indicator scores under each domain. When we combined the indicators to form domains, we did not impose any weighting. For example, to obtain the physical well-being domain we had to combine six indicators: nutritional status, sickness within one month, hospitalized with one year, hunger, the number of accidents and death rate. We might have sought to argue that the nutritional status of the children should be given a greater weighting than the other variables in the domains. However, even if I had found the evidence to sustain such an argument, there was still the question as to

how to decide what extra weighting to give to nutritional status. Therefore, I decided to treat each variable as having an equal weight, due to the absence of any theoretical or empirical justification using a for weighting (like the EU index, and the local well-being index from England). Since we were using a causal indicators model in developing the index, weighting with a factor analysis or a principal component analysis, or checking internal consistency using Cornbach's Alpha model, were not justified. As a result, the overall well-being of a child was defined as:

$$W_j = \sum_{d=1}^{D} \sum_{i=1}^{N_d} X^j_{di} \qquad (21)$$

where,

j is the number of the orphan

D is the number of domains

$N_d$ is the number of indicators in domain d

$X^j_{di\ is}$ is the value of the $i^{th}$ indicator under the $d^{th}$ domain of the $j^{th}$ child.

The orphan well-being index was built using the following steps. First, we normalized the indicator scores and summed them up under each domain. Each domain score was then averaged by using the number of indicators. I then summed up all domains, and the well-being index score was taken as an average by the number of its domains. In order to compare easily across orphanages, regions, and types, the overall index score was multiplied by 100. The greater the index value, the better the state of well-being, because the same positive direction was used for all the indicators when building the index.

$$OWI_k = \left[ \frac{1}{D} \sum_{d=1}^{D} \frac{1}{N_d} \sum_{i=1}^{N_d} \frac{X^k_{di} - X_{di}^{min}}{X_{di}^{max} - X_{di}^{min}} \right] X\ 100 \qquad (22)$$

where,

$OWI_k$ = the orphan well-being index value of the $k^{th}$ orphanage

k is the number of orphanages

D is the number of domains (in this index, it is three)

$N_d$ is number of indicators in domain d

$X^k_{di}$ is the value of the $i^{th}$ indicator under the $d^{th}$ domain of the $k^{th}$ orphanage

$X_{di}^{min}$ is the minimum scale of the value of the $i^{th}$ indicator under the $d^{th}$ domain (in this index, it is 0)

$X_{di}^{max}$ is the maximum scale of the value of the $i^{th}$ indicator under the $d^{th}$ domain (in this index, it is 100)

**5.6 Comparing Orphan Wellbeing Index (OWI) with Child and Youth Wellbeing Index (CWI)**

Since orphan wellbeing index was built mainly for Myanmar, there were many different domains and indicators with other child wellbeing indices. The Foundation for Child Development Child and Youth Well-Being Index (CWI) Project at Duke University issues an annual comprehensive measure of how children are faring in the United States. In 2007, child and youth wellbeing index (CWI) was built as a composite index of trends in the wellbeing of America's children and youth (Kanneth, 2007). In that study, CWI was measured for investigating trends over the 31-year period between 1975 to 2005, with projections for 2006. CWI was calculated

by indexing each of the 28 time series of the key indicators with a base year. The base year value of the indicator was assigned a value of 100 and subsequent values of the indicators are taken as percentage changes in the CWI. The directions of the indicators were oriented so that a value greater (lesser) than 100 in subsequent years means the social condition measured has improved (deteriorated). The 28 indexed key indicator time series were grouped into seven domains of wellbeing by equal weighting to compute the domain-specific index values for each year. The seven domain-specific indices then were grouped into an equally-weighted CWI Index value for each year. CWI index was built by assignment of key indicators. The CWI was designed to address questions such as the following:

1. Overall, on average, how did child and youth wellbeing in the U.S. change in the last quarter of the 20th century and beyond?
2. Did it improve or deteriorate?
3. By approximately how much
4. In which domains of social life?
5. For special age groups.
6. For particular race/ethnic groups?
7. Did race/ethnic group and gender disparities increase or decrease?

The main findings of that study were as follow.

1. Progress in American children's quality of life had stalled.
2. Child health continued to decline.
3. Children were safer and engaged in less risky behavior than ever.
4. Progress in narrowing racial and ethnic disparities had stalled.

5. The economic recession and slow growth of 2001-2002 negatively impacted several indicators in the family economic wellbeing component of CWI.

CWI suggested that take proactive steps at the policy and community levels to improve children lives in order to keep children happy and healthy. The CWI's long view reflected the track trends over time, including the impact of specific public policies. It was evidenced that America should be doing more to improve children's lives because the overall stall in children's quality of life was dramatically decline with reference to children's health status as well as persistent ethnic and racial disparities in the areas of education and poverty. Table 5.3 showed the main domains and indicators of CWI in which the major differences and reasons why they were different with Orphan Wellbeing Index (OWI).

Since Orphan Wellbeing Index was built as preliminary model for situation of Myanmar, the most fundamental domains and indicators were only included. The direction of all indicators took positively and it reflected how better or worse within orphanages. OWI index was one number like GNH.

1. OWI can be compared in different institutions or orphanages in order to see which orphanages have OWI scores.

2. OWI can also be compared in different districts surveyed in order to see which districts have higher OWI scores.

3. OWI can be compared across time to see if OWI is decreasing or increasing after conducting surveys.

4. OWI can be decomposed by dimension (or indicator), by district, by gender, by ethnic, by age group etc.

Table 5.3 Table showing main reasons why CWI and OWI are different

| Domains of wellbeing of CWI | Indicators of CWI | Reason why irrelevant with the situation of Myanmar |
|---|---|---|
| Family and economic | 1. income of families with children<br>2. the family poverty rate<br>3. stable parental employment<br>4. Health insurance coverage | Since the study grope was orphans under institutions family economic wellbeing was not relevant to take an account. Since all the institutions was common type of material wellbeing and the economic wellbeing of institutions were not relevant too. |
| Health | 1.infant/child/teenage mortality<br>2. overall heath<br>3. Activity limitations<br>4. Obesity | Since the study group is five to 17 years old, infant mortality rate was not necessary to take an account. Obesity cannot be found in the situations of orphans in Myanmar. Death rate within one year, sickness within one month, hospitalized within one year, nutritional status, and hunger after meal reflected the overall physical wellbeing of orphans in the index of orphan wellbeing. |
| Safety/behavior concerns | 1. teenage childbearing<br>2. violent crime involvement<br>3. cigarette/alcohol/ drug use | These indicators cannot be found in the situation of orphans because they were under governance of institutions. |
| Educational attainment | 1. national mathematics and reading tests | In the orphan wellbeing index, achievement in Myanmar reading, Myanmar writing, Mathematics and Science tests were included in order to reflect the educational wellbeing of orphans. |
| Community connectedness | 1. participation of child and youth in educational, economic and political institutions | These indicators cannot be found in the situations of orphans because the political, or youth institutions that orphans could participate were not well-developed in Myanmar. |

Table 5.3 (Continued)

| Domains of wellbeing of CWI | Indicators of CWI | Reason why irrelevant with the situation of Myanmar |
|---|---|---|
| Social relationships | 1. the prevalence of children in single-parent families<br>2. residential mobility both of which disrupt social relationships and affect children's social capital | Social relationships was extracted out because orphan wellbeing index was mainly built on the basic needs approach. |
| Emotional/spiritual | 1. adolescent/teenage suicide rate<br>2. the importance of religion<br>3. attendance at religious services | Adolescent/teenage suicide rate cannot be found in the situation of orphans. Religion was mostly set by the institutions and that would only differ with the kind of faith-based institutions. Happiness at school, happiness at orphanage and good relationship with peers reflected both emotional and social wellbeing of orphans. |

In this way we can see how shortfalls in OWI vary across disaggregated levels. In this way OWI can be used as an instrument of policy, and can capture a great deal of interconnect information.