

Chapter 4

Empirical Reviews

Since child well-being is a multi-dimensional concept, there are numerous approaches and quantitative measurements that have been developed. Depending on the purpose of the evaluation of the outcomes, the measuring techniques and research methodology will differ. For instance, the objective of the study emphasized may include the perception of children's rights, needs, development, well-becoming, survival, effects and abuse. This chapter presents an empirical review of the literature in the field of child well-being, by dividing into two parts which are: the findings in the developed or industrialize countries, and the findings in developing countries.

4.1 Empirical Review on Developed Countries

Depending upon the purpose of the study in question, the selection of the indicators of well-being will be different. There are several surveys that have examined the well-being of children using a regular basic. In a survey of the Comparative Indicators of Education in the United States and other G8 Countries in 2004, the focus was on the children's civic life, especially enrollment, educational expenditure, public funding, earnings, education, achievements and literacy (Anindita, Partelow, and Miller, 2004). The indicators of safety, physical status, personal life, civic life, economic resources, contributions and activities, were examined in a German survey which was concerned with the children's and their family's life and

economic situation. On the other hand, measuring the trends in child well-being and its changes over time using the indicators of material well-being, health, safety, production, educational and community activities, social relationships and emotional well-being were evaluated in an American survey (Land, 2005; Land, 2006; Land, 2007). In a UK survey, since the Government was focused on the outcomes of public service provision, achievements in health, safety, contribution and economic well-being, educational outcomes and positive behaviors were evaluated.

Bradshaw, Ditch, Holmes, Hilary and Vilhiteford, (1993) studied the child support package consisting of all social security benefits, child support arrangements and benefits for lone parents, as well as other benefits that reduced the cost of health care, housing, child care and schooling.

A foundation of the Child Well-Being Index (CWI) can be found in the studies of Bradshaw and Mayhew (2005); Bradshaw (2001); Bradshaw (2002); Hanafin and Brooks (2005), Aber, Gershoff, and Brooks-Gunn (2002); Land (2007), in which they compared children in the USA and four other English speaking countries, namely Australia, Canada, New Zealand and the UK. In this study, nineteen international indicators of child and youth well-being were compared. All of these indicators covered the seven dimensions of economic well-being, including social relationships, health, safety and behavioral concerns, community connectedness, emotional well-being and educational attainment.

In some countries, children who have not been included in child surveys struggle with structural disadvantages, because of their belonging to ethnic minorities, having a disability, living in poor situations such as temporary housing, or being refugees (Bradshaw, Hoelscher, and Richardson, 2006). In these situations,

child well-being needs to be analyzed from the perspective of non-discrimination, by capturing the life situation and well-being of the children in question.

Since social exclusion is a multi-dimensional concept comprising of the social, cultural, political and economic aspects of disadvantages and deprivation, the outcomes of child poverty, child abuse and neglect, social effects and exclusions, unsatisfactory child development, poor school performance and deaths by accident or injuries, can all be found in the literature of the European Commission (2003), UNICEF (2007) and Ackerman, Feeny, Hart, and Newman (2003). In the literature of Bradbury and Jantti (1999), the authors focused mainly on the poverty of children, and stated that the approaches to anti-poverty policies have varied across industrialized countries. The researcher analyzed the variations in child poverty by using a set of income poverty definitions. The impacts of poverty and its disadvantages in terms of children's lives were studied in the literature of Attree (2004). Asher and Paquette (2003) studied loneliness and peer relationships in childhood, which is one of the indicators of child development within the domain of emotional well-being.

Not only the overall approaches in terms of the studies or research on child wellbeing are important. It is also important that the measuring techniques used by the researchers are studied. In the report card of UNICEF (2007), and in a study of 21 industrialized countries, the researcher chose six categories of child well-being which were: material wellbeing, health and safety, education, peer and family relationships, behaviors and risks and the subjective sense of well-being. The researcher used 'z-scores' as the method of measuring well-being. Z-scores are calculated by using a common scale whose upper and lower limits are defined by all

the countries in the group. A country's overall score for each dimension of child well-being is calculated by averaging its score for the components chosen to represent that dimension. If a component has more than one indicator, these indicators scores are averaged. In this study, the researcher gave equal weight to the components that made up each dimension, and to the indicators that made up each component. Equal weighting was the standard approach used in the absence of any compelling reason to apply different weightings, and was not intended to imply that all elements used were considered of equal significance. By using this method, it could be seen that whether a country fell above or below the average for the group as a whole. The unit of measurement used on this scale was the standard deviation (the average deviation from the average). For instance, a score of +1.5 meant that a country's score was 1.5 times the average deviation from the average. To ease interpretation, the scores for each dimension were presented on a scale with a mean of 100 and a standard deviation of ten.

Heshmati (2007) developed a more sophisticated method of measurement based on the data of UNICEF (2007). The author measured child well-being using three different approaches, in order to invent three composite indices. The objective of the study was to invent three different composite indices and indicators to which the countries had the best system of child well-being, and to show how child well-being varies across countries and regions in accordance with different indices. The first indicator was a non-parametric index (like the Human Development Index) which gave equal weight to all the indicators while using aggregation to form different components from which an overall index was constructed. The other two

indicators were parametric indices. These different forms of parametric index were estimated by using principal component analysis⁴.

The first parametric model used a pool of all the indicators, without classifying the indicators by type of well-being, while the second model estimated first the sub-components and then used the level of variance explained by each principal component, in order to compute the weighted average of each component and then aggregated them into an index of overall child well-being.

Bradshaw, Bloor, Huby, Rhodes, Sinclair, and Gibbs (2009) developed a local index of child well-being in England within the domains of material well-being, health, education, crime, housing, environment and children (at risk of being) in need. The objective of this report was to create, with the survey data, a small area index exclusively for England. Since Child Well-Being Index (CWI) was restricted in the survey by the availability of data and many datasets were not disaggregated by age group, CWI was measured at local authority district and county council levels. In this study, the targeted age group was zero to sixteen or eighteen years of age. In the case of building a well-being index, the authors gave equal weight to domains (material, health, housing and environment) whose indicators had no inter-correlation, and gave weight with maximum likelihood factor analysis to domains (crime and health) whose indicators seem to have a strong correlation with each other.

⁴Principal component analysis is a multivariate technique for examining relationships within a set of interrelated quantitative variables. Given a dataset with J numeric indicators, at most P principal components can be computed; each is a linear combination of the original indicators with coefficients equal to the eigenvectors of the correlation of the co-variance matrix. The principal components are sorted according to the descending order of the eigenvalues, which are equal to the variance of the components.

The overall index was measured by giving equal weight to all the domains, and this allowed the study to state, not only the country wide, but also regional pictures of the state of well-being of the children.

In a monograph entitled the 'Healthy Setting for Young People in Canada', a survey of the health behavior of school-aged children in Canada was conducted as a cross-national project (Boyce, Matthew, and Jennifer, 2008). That study mainly focused on the outcomes of healthy living practices, risk behavior, bullying and fighting behavior, activities and injuries, and emotional health status. Young people's health was important within the environment of their home setting, their school setting, their peer setting and as a function of their socio-economic status. The survey was conducted in all provinces and territories in Canada. Under the home setting domain, indicators covering the living arrangement of the students, their happiness at home, parental communication, understanding and trust, parental opinion and expectations, and also conflict with the parents, were examined with closed 'yes' or 'no' questions. The school environment context was measured using indicators in which student achievements, feelings of satisfaction and belonging, safety at school, aspects of teacher, peer and parental relationships, and pressure of school were all examined. In the domain of peer relationships, having same- and opposite-sex friends, interrelations with friends, and the pro-social attitudes of the friends, were all examined as indicators. Socio-economic conditions were measured taking into account aspects of family wealth and deprivation conditions.

Not only were the overall dimensions of well-being analyzed, but also the specific dimensions of well-being such as physical or emotional well-being, were studied across all fields. Since subjective well-being is one of the main

dimensions of well-being, Michael Shields and Mark Wooden studied the relationship between family structure and subjective well-being (SWB) by using the first wave of the Household, Income and Labor Dynamic in Australia (HILDS) as survey data. In this study, the authors analyzed subjective well-being as a dependent variable, with a scale of zero to ten used for each related question, and reported mean life satisfaction scores with their standard deviations, disaggregated by sex, marital status and the presence of dependent children under the age of fifteen years. In order to quantify the impact of family characteristics on the level of life satisfaction, the multivariate regression framework was used. Since when using this method, the dependent variable is an ordinal score and does not have properties usually assumed for ordinary least squares estimation (OLS), the researcher used an ordered probit model for analyzing the impact of family characteristics on the level of life satisfaction.

Another typical dimension of well-being is physical well-being. Buerger (2007) examined children in the southwestern United States who at a young age, had been removed from their home because of substantiated child abuse and/or neglect. The author analyzed cross-sectional data for 275 children, collected at the age of eight. The study mainly examined the differences between children who had been placed in kin care, as opposed to those who had been adopted, placed in non-kin care, or had been reunited with their parents. The dependent variable for scoring child well-being was mainly focused on mental and physical health. The researcher measured the mental well-being of each child by scoring the indicators for anxiety, depression, anger and social problems, using the T-scores method, which was most often used in emotional measurements and computed using a range of zero to 100. Physical well-being was measured in relation to questions of safety, that is, violence directed at the

children through discipline, safety problems at school and exposure to violence in a variety of settings. Placement options were analyzed as independent variables. In order to know how the children in kin care compared with those in non-kin care and those had been reunited with their parents, the researcher used linear and logistic regression with placement dummy variables for each dimension of child well-being and child safety. It was found that there was little significant difference between the children in different placement settings, in terms of emotional and psychological well-being. Children reunited with their parents reported significantly lower levels of depression, but also lower level levels of physical well-being in terms of the number of safety measures. The findings of the research showed how children in specific placements differed from one another, but did not explain why they differed.

Since one of the important states of well-being is physical well-being, the assessment of the nutritional state of a child is also vital. Research measuring and evaluating the nutritional status of children was found in the existing literature, though measuring the nutritional status of a child is a very specific and health related issue. Most of the research was carried out by measuring the weight and height of children and comparing these variables with existing growth references, such as the NCHS/WHO index, with respect to the child's age and in order to decide the nutritional state of the child. However, one of the nutritional assessment research studies was rather different, with a traditional study found in the research journal *Medicine and Medical Sciences*, which was done in Egypt. Monir, Alba, Galal, Moushira, and Ruby (2008) studied the assessment of growth and nutritional status of Egyptian children and adolescents, by using upper arm muscle area by height. The main objective of the study was to develop standards of upper arm muscle area by

height (UAMAH), for Egyptian children and adolescents aged two to seventeen years of age. The main reason why the researchers developed these growth standards was to take into account the situation where age data was unreliable and not known precisely. The sample took 7710 girls and 7513 boys who were children and adolescents from nurseries and private schools in the Cairo and Giza governorates, and excluded lean and fat individuals. In the study, weight, height, mid-upper arm circumference, and triceps and sub-scapular skin fold thickness were all measured in order to calculate the UAMAH. The mean and percentiles of upper arm muscle area were calculated for three centimeter increments in height and for each sex separately. The correlation between upper arm muscle area and height was examined by the Pearson correlation matrix. The study suggested that UAMAH can be an index for evaluating the growth and body composition of children and adolescents in rural areas when age is unreliable, and in conjunction with the weight for height (W/H) index.

4.2 Empirical Reviews in Developing Countries

In this section, not only an overview of child well-being in developing countries (which means the trends found in indicator assessments), but also the empirical research and studies which have focused on each dimension or aspect of well-being, will be presented.

Brown, Smith, and Haper (2002) carried out an overview of research covering thirteen international surveys on children, as part of the development of internationally comparable indicators of well-being. In this study, the researcher prepared an overview of the surveys carried out with respect to the dimensions of health, education, income, employment and demographics and also

social aspects. The Asian Young Adult Reproductive Risk (AYARR)⁵ project research network conducted the survey, which provided a comparative analysis of Asian young adult reproductive health and risk behavior. Six countries and territories in Asia participated in the project, these being Hong Kong, Indonesia, Nepal, the Philippines, Taiwan and Thailand. The survey was comprised of information from the Hong Kong Adolescent Sexuality Survey (ASS), the Indonesia Baseline Survey of Young Adult Reproductive Welfare (RRS), the Nepal Adolescent and Young adult survey (NAYA), Philippines' Young Adult Fertility and Study II (YAFS II), the Taiwan Survey of Young Adults and the Thailand Family and Youth Survey (FAYS). In the survey of Adolescent Sexuality (ASS), information on life satisfaction, health status, friendships, personal relationships, dating and sexual behavior, knowledge of sexual health, homosexuality, knowledge of HIV/AIDS, sex education and contraception was gathered. The Indonesia Baseline Survey of Young Adult reproductive welfare (RRS) mainly focused on information concerned with marriage and child-bearing patterns, family characteristics, indicators of health risks, knowledge of reproductive health, use of family planning methods and program services, and knowledge and treatment patterns for HIV/AIDS. The Nepal Adolescent and Young Adult (NAYA) Survey was conducted on young people aged fourteen to 22. In this survey, the questionnaire built on indicators which covered information about puberty, menstruation, friendship, love, marriage, sexual behavior, pregnancy and childbearing, knowledge and practices on family planning, knowledge of

⁵AYARR project uses surveys of young adults; with most surveys covering youth ages fifteen to twenty-four. Most surveys are online at <http://pisun2.ewc.hawaii.edu/ayarr/>

HIV/AIDS, gender roles, mass-media exposure, awareness of girl-trafficking and substance use. The Philippines Young Adult Fertility Study II was conducted by examining information on reproductive health knowledge and behavior, condom use, sex with commercial sex workers, homosexuality and HIV knowledge or attitudes. In the Taiwan Survey of Young Adults, the questionnaires used were concerned with adult knowledge, attitudes and practices in terms of sex, cohabitation, the timing of first marriage, mate selection, staying single for life, childbearing and contraception, genetic health, risk behaviors related to health, AIDA and parent-child relations. The Family and Youth Survey of Thailand (FAYS) mainly focused on indicators related to family background, education, work, family formation, self-esteem values, health related issues, and sexual experience. All of these surveys were conducted from the aspect of the health domain of well-being. Depending on the nature of the countries, it could be seen that the nature of the indicators that was collected varied in some areas. According to the overview of Brown, Smith, Berkely, and Haper (2002), most of the surveys conducted in Asian countries were focused mainly on health related issues.

In the developing world, several literatures have focused typically on the specific dimensions of the well-being of children, and in accordance with the fields of research conducted, the approach of any individual research has tended to be different, depending upon the interest and objectives of the study. For example, in African countries the research has been mainly focused on disease infected children, as well as orphaned and alienated children who have been victims of HIV/AIDS and other health and growth specific related issues. Bharagava, (1998) used a dynamic multivariate model in the study of scores obtained from cognitive tests and school examinations carried out by approximately 110 Kenyan children

(aged six to nine years) in the Embu region of Kenya. A dynamic multivariate model was formulated for the scores and was estimated using three repeated observations. In this study, the author used the children's body mass index (BMI), their head circumference, hemoglobin concentration (as measures of biological development) and grade levels, as important predictors of the scores on higher order cognitive tests. A battery of cognitive tests was then given to the children three times during an academic year. Behavioral cooperation was assessed by trained observers assigning scores and by carrying out school examinations and recording the results, during the three terms over the observation period. Moreover, the author examined the intake of food by the recall method, by weighing food portions and by laboratory analyses of indigenous recipes. Sicknesses of the children were recorded every two weeks during the observation period, as well as the number of days for which a child was sick with different symptoms, and this data was combined to form an index of morbidity. The children's height, weight, arm and head circumferences, as well as skin-fold thickness, were all measured monthly using two independent measurements and then the correlations tested and used. For each child, the parents' education, age and earnings data were recorded, as were the sanitation and hygiene practices of the household. Household possessions and cash income were used to build an index of socio-economic status (SES). This dynamic model explained total scores on cognitive tests in which the coefficients of head circumference, body mass index and morbidity were statistically significant. The intakes of energy, protein and iron were not significant predictors. The model found out that the coefficients of examination scores were all not significant, because the school environment was similar for most of the children and the data on examinations was available for only a small number of

children and contained a school-specific scoring bias.

Bharagava, Bundy, Donald, Junkes and Sachs (2001) built a model based on the determinants of the scores gained on cognitive and educational achievement tests and on the school examinations of approximately 680 Tanzanian school children who were between nine and fifteen years old, and within the longitudinal random effects framework. That model incorporated biological aspects by obtaining the intensity of the children's parasitic infections of hookworms and schistosomiasis, anthropometric indicators and also behavioral factors, by including the children's school attendance and grade levels, socio-economic factors and the educational infrastructure. The author pointed out that those children's cognitive development from poor societies was affected by their nutritional status, socio-economic factors and the educational infrastructure. Socio-economic and demographic variables were collected and used to construct an index by summing up the households' scores. Child health status was measured, using indicators of weight, height, mid-upper arm circumference, in three surveys covering a fifteen month period. In each survey, two milliliters of blood was drawn and urine samples were taken during the third survey round. Hemoglobin concentration was also measured. Hookworm eggs were counted and expressed as eggs per gram of stool. The cognitive tests and verbal fluency tests were analyzed by using various kinds of test methods. The educational test examined the scores for spelling, comprehension, arithmetic, English, Kishwahili (Local Language), science, domestic science, geography and civics. Educational infrastructure scores were obtained by recording variables that reflected the infrastructure and the teacher's qualifications. In the first model, the author stated that school attendance depended upon the variables from the socio-

economic and demographic scores index, upon resting before and after school, and on C-reactive protein and Hemoglobin levels. In the second model, the cognitive scores depended on the variables of the students' grades, socio-economic and demographic index scores, hookworm levels, schistosomiasis, height, and C-reactive protein and Hemoglobin levels. The third model stated that educational achievement depended upon the variables of the students' grades, socio-economic and demographic index scores, hookworm levels, schistosomiasis, height, C - reactive protein and hemoglobin levels, and school attendance. A simple random effects model was conducted with the assumption that the errors were independent across the children, but were correlated over time with a positive definite variance-covariance matrix. The empirical results showed that the variables of height, hemoglobin concentration and C-reactive protein levels were important for health status. Educational achievement scores were significant when aligned with the variables of the teachers' experience and work assignments.

The above study incorporated biological aspects into the child development research. On the other hand, there has been some research which has mainly emphasized the nutritional status of the children in question. Since nutritional status is considered to be an important aspect of a child's well-being, Raheela, Ali, Ferroni, and Underwood (2002) studied the nutritional status of school-age children in an urban squatter settlement in Pakistan. A random sampling method was used in order to collect data on five to ten year old children. Their nutritional status was examined using weight-for-age (underweight) z-score, height-for-age (stunting) z-score, and weight-for-height (wasting) z-score indicators, by comparing these with growth references, and then the researcher analyzed the nutritional status of the

children and correlated this with socio-demographic variables such as age, family income, family size and gender. Similar research was conducted by Heshman M.A.M. et al. (2005) through examining the z-score values of anthropometric indicators. This study emphasized the determinants of protein energy malnutrition and its association with soil-transmitted helminthiases in Orang Asli children (two to fifteen years old) in Selangor, Malaysia. The author found that malnutrition in the developing countries has a significant relationship with socio-economic and demographic factors, the distribution of food within the family, immunization status, childhood illness, intestinal parasites and childhood nutrition, including prolonged breast feeding. The results showed that intestinal parasitic infections were the main predictors of stunting and wasting in addition to age, between two and six years.

Another nutrition research exercise was carried out in Dong Thap Province, Vietnam, by evaluating the impact of a school nutrition program (Hall, Hanh, Farley, Quynh, and Valdivia, 2007). In the study, primary school children in seven schools were supplied with milk and biscuits which added up to 300 kcal of energy each school day over a seventeen month period, and they were also de-wormed. These children were then compared with children in 21 schools who had not participated in the program. The initial z-scores of weight-for-age, height-for-age, weight-for-height and body mass index were calculated, and linear regression analysis was conducted in order to examine the changes in body weight at the end of the period. This multiple-level model showed a small but significant effect with control variables such as sex and age. It was found that the most undernourished children gained weight the least. Ghuman, Jere, and Socorow (2006) studied nutritional status from the perspective of school enrolment and school quality, in the paper “Children’s

Nutrition, School Quality and Primary School Enrollment in the Philippines”, by using the longitudinal data of 1251 school-age children and families, and early childhood development information. The author first examined the effect of nutritional status at pre-school age on the enrollment in the first grade, by utilizing the estimation method of ordinary least square (OLS), in which dependent and independent variables are primary school enrollment, and the z-scores are height-for-age, hemoglobin levels and control variables. The effect of multiple dimensions such as the school and teacher quality on enrollment, along with attention being paid to family characteristics, was also analyzed. It was found that children’s hemoglobin levels had a significant and positive effect on school enrollment, and further that there were interactions between family background, and the quality and accessibility of schools with reference to enrollment.

Since developing countries tend to focus mainly on health and nutrition as indicators of the well-being of children, Takakura, et al. (2001) conducted research on the relationship between nutritional status and the levels of malaria infection in youths aged from two to eighteen years in Khammouane Province, Lao PDR. The study was conducted in the rural communities of Khammouane, which had been affected by malaria. In order to decide the nutritional status, weight-for-height and height-for-age z-scores were calculated. The author omitted the weight-for-age z-score, because that indicator failed to distinguish tall and thin children from those who were short, but with adequate weight. Blood samples were obtained in order to investigate the malaria parasites, *Plasmodium falciparum* and *Plasmodium vivax*. The result showed that *Plasmodium falciparum* was associated with acute malnutrition (where the weight-for-height z-score was lower than -2 standard deviations, with

reference to the NCHS growth chart) and the Plasmodium vivax infection was not associated with any indicators of malnutrition. Wiwanitkit and Sodsri (2003) studied specifically the correlation between semester examination scores and the underweight status of children, with reference to the body mass index (BMI), in the area of the Thai-Cambodia border. School-aged children (55 boys and 40 girls) between six and ten years were examined. Semester examination scores were obtained from the examination, which covered cognitive, psychomotor and affective dimensions associated with children's level of ability. BMI was compared with the references of Hammer, Kraemer, Wilson, Ritter, and Dornbush (1991) (in which the BMI growth references were calculated for Saudi children and adolescents). The results showed that BMI was likely to be significantly correlated to the semester examination scores. Since several researches had been conducted in terms of nutrition, Bariragi and Rati (1998) studied the inconsistencies in the findings of child nutrition surveys in Bangladesh. The objective of the study was to investigate the reasons for inconsistencies in the findings of Bangladesh Bureau of Statistics (BBS) surveys. The method of the study was that BBS conducted the post-enumeration check (PEC) on 100 randomly selected children included in the previous national survey through the collection of anthropometric (weight-for-age, height-for-age weight-for-height and mid-upper arm circumferences) and age data. In order to estimate errors in the anthropometric measures and age, the researcher assumed that the actual data collected in the PEC study used observed values. The expected values of age and anthropometrics indicators were derived from the previous survey, in which the data were assumed to be accurate. The expected age was obtained through the age of the children in the previous survey, by adding the time difference between the survey and

the PEC date. The expected weights and heights were obtained through the children's weight and height at the survey date, plus the expected gain in weight and height between the survey date and the PEC date, by analyzing second degree polynomial regression equations. The author assumed that the differences in mean in the observed and expected values of a variable in the PEC data, would be the result of bias in the measurements between the survey and PEC. T-test or chi-square tests were used for estimation of the correlation. The results showed that the biases in age data were highly significant and a second significant indicator was the bias in the mid-upper arm circumferences. One of the factors which was also reported was the age reliability problem; birth records were rarely maintained and the teachers sometimes recorded the date of birth of the children on the basis of his or her own guess.

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