Chapter 5

Conclusions and Recommendations

Methodological consideration

The study population and representativeness of the sample

The present study was a community-based study conducted at a primary school and a secondary school in Pathumthani province. Subjects were selected from the targeted population by purposive sampling after that the classes were randomly selected within grade. Therefore, the findings of this study might not be represented and generalized to the students in either Pathumthani province or Thailand. Further studies subjects should performed cluster sampling technique to selected areas and categorized each areas by local, district or province so that the results could be representativeness and generalizibility to the population.

There were some pupils absent the classroom at the data collection times so that both of child and their parents were excluded from this study. These participants might have the possibility of low quality of life that account for their absence and might be lead to the selection bias of this study. However, the response rate in this study were 2,083 of 2,237 child (93.1%) and 1,818 of parents (81.3%). This response rate was very high so that the potential of response bias was negligible and could be overlooked.

The study design

This study was designed as a cross-sectional survey study, in which type of community base. This design was use because of the optimal time efficient and less expensive. This design had some advantages such as it allowed several exposures for investigating, and several domains of health-related quality of life could be measured at the same time.

There were some limitations in cross-sectional survey. This design did not permit the assessment of direction of the causality. The contemporary of exposure and outcome could not be discovered. The exposure and outcome had already occurred and only the respondent's account on their timing can establish the sequence of events. In addition, this design was also impractical for the study of rare diseases. Thus, selection of this design will not possible for establishing a causality association between characteristics and their impacts on quality of life. However, the evidence suggests that obesity could signify the lower health-related quality of life (Arif and Rohrer, 2006; Hulley et al., 2001; Jia and Lubetkin, 2005; Schwimmer et al., 2003; Swallen et al., 2005; Williams et al., 2005).

The role of chance

The estimated sample size for this study was 1,877 participants but 1,866 pupils and 1,790 parents were recruited into this study, 729 from primary school and 1,137 from secondary school. Although the participants recruited into the study was less than estimated sample size, it could be reliable as the sample size was calculated based of the response rate of 70%. As the response rate was higher than 80%, less sample size was needed and this study had sufficient power to detect the effect and capable to reject the alternate hypothesis with 95% confidence. The appropriate statistical test was used in this study and made it unlikely to explained the main findings by chance (type I error). It could be noted that multiple statistical tests were conducted to assess the significance of finding and the probability of type I error would be increased with respect to subgroup analysis.

The role of bias (Systematic Error)

Bias has been defined as 'any systematic error in the design, conduct or analysis of a study that results in a mistaken estimate of an exposure's effect on the risk of disease' (Gordis, 2000). Bias could be reduced by the proper study design and execution. It could not be reduce by increasing the sample size which only increased the precision and reduced the opportunity of random chance deviation from the truth.

Most of studies had bias; especially observational study designs was inherently more susceptible to bias than experimental study designs. Several type of bias can be arise from many sources including the manner, in which participants were selected for the study and in which information were obtained, reported or interpreted (Hennekens and Buring, 1987). Bias trended to produce results that systematically differed from the truth (Sackett, 1979).

Selection bias

Selection bias referred to a distortion in the estimation of the effect and was a consequence of the way in which participants were selected for the study population (Kleinbaum et al., 1982). Selection bias would be occurred as a result of the improper procedure used for selecting study participants from the target population to become the study population. It also would be occurred as a result of factors that influenced continuing participation of subjects in a study. Limitations of this study included specific samples, who selected from two schools in Pathumthani province, possible caused selection bias. Also possible sampling biases introduced by the study of obesity who desired obese and non-obese. The detected differences between groups may represent the extremes on the spectrum of our measures.

Information bias

Information bias can occur when the means for obtaining information about the subjects in the study are inadequate so that as a result some of the information gathered regarding exposures and/or disease outcome in incorrect (Gordis, 2000). The inherent weakness in cross-sectional design was the potential for observer bias which can be arise from interviewer's and participant's perception. Information bias (non-differential misclassification bias) might be occurred as the self-report questionnaire was used for data collection in this study. Although the researchers performed qualify advice in the classroom for answering the questionnaire, pupils could be misunderstood and did not answer in the right way. Moreover, proxy questionnaires were collected by mail and some pupil may have

misinterpretation. Therefore, questionnaires must be clarified and eased for understanding.

Implication consideration

This investigation described health-related quality of life of school pupils, evaluated factors that related to HRQOL of school pupils, and assessed the impact of obesity on HRQOL of school pupils. There were 2,083 children and 1,818 parents recruited in the study. The response rate of children and their parents were 93.1% and 81.3%, respectively. About 39.1% and 60.9% of children were studying in primary school and secondary school, respectively. Approximate 26.7% of children were classified as obesity since they met ≥120% the mean weight for children for this height and the other 73.3% of children were classified as non-obese children.

The quality of life of children was measured by the PedsQL^{TM} 4.0 generic core scale (Thai version). The child self-report for children and adolescents was administered the 23 items of PedsQL^{TM} 4.0 Generic Core Scales in their classroom, which are printed on one side of one sheet of paper for each age-appropriated form, and take time about 15 min to complete of all questionnaires. Data entries were used EpiData version 3.02 and data analyzed were used Stata^{tm} version 9.0.

Internal consistency reliability (Cronbach's alpha) of the PedsQL^{TM} 4.0 (Thai version) was strong, with alphas for the full 23-item scale approaching 0.9 in both child self-report and parent proxy-report (α = 0.85 and 0.91, respectively). The result was so alike to the study of Varni et al., which are studying reliability and validity of the PedsQL^{TM} 4.0 in healthy and patient populations, found that the internal consistency reliability for the total scale score in both child self-report and parent proxy-report were 0.88 and 0.90 , respectively (Varni, et al., 2001).

The mean (SD) of total summary score of children were 75.8 (11.0) in child self-report and 72.4 (15.7) in parent proxy-report, respectively. The HRQOL both child self-report and parent proxy-report lower than report form Varni et al., which survey of 2437 children ages 8–18 and 4227 parents, found that the means (SD) of the PedsQL^{TM} 4.0 scores for the total score of children and parent proxy-report were 80.64 and 76.92, respectively (Varni et al., 2006). This difference may be affected by population, reaction to health or disease, especially physical functioning and psychosocial health, perceptions' individual and by chance.

Children reported the lowest score in psychosocial health, followed by total summary, and physical functioning whereas their parent reported the lowest score in physical functioning, followed by total summary, and psychosocial health. The result of children reported was similar to other study except the reported from their parent (Varni et al., 2002, Bastiaansen et al., 2004, Varni et al., 2006, Gkoltsiou et al., 2008). Children reported lower HRQOL on the emotional scale than their parents, and corresponded to the previous research of Modi &Quittner (Modi et al., 2003). Young children may had difficulty expressing their emotions directly to their parents, another factor could be the likeliness that proxy-report reflect parental anxiety about their child (Gkoltsiou et al., 2008; Upton et al., 2005(a); 2005(b)). This aspect should be further investigated in different populations, and confirms the need to measure both child and parent perspectives when evaluating HRQOL. The use of proxy-report to estimate HRQOL was necessary when the child is either unable or unwilling to complete the HRQOL measure.

HRQOL of school pupils was found to be related to many factors with significant difference across age and gender. In this study, children and adolescents had statistically difference in HRQOL in all domains both child self-report and parent proxy-report. Adolescent had significantly higher than child for all domains child self-report and parent proxy-report. Our findings were consistent with previous research, which found the older children had HRQOL scored higher than younger children (Bastiaansen et al., 2004). Young children may interpreted questions differently, and adopted a different time perspective regarding the course of a disease. In addition,

their abilities to used rating scales, understand the language, and generally complete lengthy questionnaires.

Regarding gender differences, we found that girls reported lower levels of total summary and physical functioning than boys except psychosocial health which was non-significant difference. The relation between gender and the PedsQL™ 4.0 scores were investigated. Chen et al. found that Social Functioning, School Functioning, and Psychosocial Health Summary were reported, with girls reporting higher HRQOL than boys (Chen et al., 2007). Reinfjell et al. found that the noted on the emotional functioning subscale, girls reported lower HRQOL than boys (Reinfjell et al., 2006). This was consistent with previous research regarding gender differences in emotional health (Reinfjell et al., 2006; Rosenfield et al., 2000). Girls were more likely to suffer more emotional health problems such as anxiety and depression than boys. The gender differences would seem to reflect a genuine disparity between boys and girls.

In this study, the impact of obesity on HRQOL found that no statistically different in all domain, either child self-report and parent proxy-report. While previous study were reported significantly lower HRQOL in all domains for obese children and adolescents (Schwimmer et al., 2003; Jia & Lubetkin, 2005; Swallen et al., 2005; Williams et al., 2005; Arif & Rohrer, 2006). Base on cross-sectional data collected in 2000 within the Health of Young Victorians Study, a longitudinal cohort study commenced in 1997 with sample of 1943 children in the original cohort, 1569 (80.8%) were resurveyed 3 years later, Williams et al. found that Parent-proxy and child self-reported PedsQL scores decreased with increasing child weight (Williams et al., 2005). A cross-sectional study of 106 children and adolescents, who had been referre to an academic children's hospital for evaluation of obesity, Schwimmer et at. found that obese children and adolescents were more likely to have impaired health-related QOL than healthy children and adolescents (Schwimmer et at., 2003). The HRQOL scores also were significantly lower for overweight, moderately, and severe obese participants. Our results found no statistically different in all domains between obese and non-obese in reporting both child self-report and parent proxy-report. One

possible reason why these results diverge from other studies that maybe due to study setting such as community-base and clinical-base, severity of obese, and categorized of obese. Furthermore, a study into the impact of obesity on HRQOL should study in community-base and several areas.

The findings of the present study could be concluded that HRQOL measured by the PedsQL^{TM} 4.0 at the school pupils were good reliability and affected by the age and gender of pupils. Obesity among pupils had little effect on quality of life. The present findings have several limitations. Samplings of population and information biases were possible, which may limit generalizability of the finding. Further study, research related to HRQOL in pupils would be performed with participants to the several schools, including allocating to rural and urban areas.