

Life Assets in Teenage Pregnancy

Thatsanee Soontrapirom,* Suriyadeo Tripathi, M.D.** , Pattarawalai Talungchit, M.D., Ph.D.***, Suporn Apinuntavech, M.D.****

*Candidate, M.Sc.in Child, Adolescent and Family Psychology, Faculty of Graduate Studies, Mahidol University, **National Institute for Child and Family Development, Mahidol University, Nakornpathom 73710, ***Department of Obstetrics and Gynecology, **** Department of Psychiatry, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand.

ABSTRACT

Background: Teenage pregnancy is an evolving global public health problem. Level of life assets could predict behaviors and take effect to less sexual risk behaviors in teenagers.

Objective: To compare life assets between pregnant and non-pregnant teenagers and to evaluate the relationship between basic factors and teenage pregnancy.

Methods: A total of 172 female teenagers aged 12-19 years were included. The control group was matched with the case group by age with mean age of 17.07 years old. The case group consisted of 86 pregnant teenagers who attended the Teenage Antenatal Care Unit at Siriraj Hospital. The control group consisted of 86 teenagers who were not pregnant and who had never been pregnant. The research instruments were general information and life assets inventory questionnaires developed by Suriyadeo Tripathi with Cronbach's Alpha coefficient at 0.890.

Results: Mean life assets scores were significantly higher in the control group than in the case group (T-test analysis: Mean = 94.70/87.65, SD = 17.45/22.68, p-value = .024, respectively). The control group scored more favorably than the case group on 16 items. In addition, the case group could not meet the minimum assessment criteria on 21 items, which indicated their status as an at risk group. A total of 12 factors were found to be statistically significantly associated with teenage pregnancy.

Conclusion: Overall life assets were significantly higher among teenagers who had not experienced pregnancy. The risk factors included level of education, GPA, family income, mothers or family members of teenagers having experience of teenage pregnancy, main guardians, father education, mother occupation, parental relationship, family warmth and smoking were found to be significantly associated with risk of teenage pregnancy in this study. These results will help to facilitate preventive interventions and the development of policies and guidelines to control and perhaps reverse current trends in teenage pregnancy.

Keywords: Life assets; teenager; pregnant teenager; factors affecting teenage pregnancy (Siriraj Med J 2017;69: 114-121)

INTRODUCTION

Teenage pregnancy is an important public health problem in Thailand and worldwide. It is likely that rates of teenage pregnancy will continue to rise into the foreseeable future.¹ Annual birth rates among Thai teenagers for the past 10 years have been higher than the surveillance criteria determined by the World Health Organization.² Thailand's teenage birth rate is ranked 5th among ASEAN countries.³ It was reported that the age of Thai teenagers who have their first sexual intercourse experience is younger than in the past, and that only

55.1% of teenagers used a condom when they had sexual intercourse for the first time.⁴ There are many teen mothers, who decide to terminate their pregnancy, by having an illegal abortion. Available abortion statistics show continuous year after year increases.⁵ This alarming trend in teenage pregnancy has motivated public health and other related organizations to develop preventive interventions to reverse this trend due to its impact on the quality of life of infants and teenage mothers, including physical, emotional and societal aspects.^{6,7}

There are several causes and factors that associate

Correspondence to: Suporn Apinuntavech

E-mail: suporn.api@mahidol.ac.th

Received 4 November 2016 Revised 3 January 2017 Accepted 10 January 2017

doi:10.14456/smj.2017.24

with teenage pregnancy, including age, family, and environment, (e.g., school, friends, community, society, and media).^{8,9} These factors involve life assets which are the interesting factors. Life assets suggest the basic assets of psychological, social, and intellectual development and they enable individuals' to live effective and successful lives. Life assets are the predisposing factor, which involves children and youth's life skills and consciousness as well as their surroundings atmosphere. Life assets instrument comprised of 48 indicators grouped in 5 aspects; namely, power of self, power of family, power of wisdom, power of peer and activity, and power of community. Life assets are enabling factors or good attributes that affect the cognitive and decision-making process. From previous studies, the teenagers who have more life assets, will have less risky behaviors such as sexual intercourse.^{10,11} In Thailand, no research studies on life assets affecting teenage pregnancy have yet been conducted. The hypothesis of this study was pregnant teenagers had different life assets from non-pregnant teenagers, and the basic factors such as learning achievement, parents' marital status, family relationship, family income, and peers were associated with the teenage pregnancy. This study also aimed to compare life assets between pregnant and non-pregnant teenagers, and to evaluate the relationship between basic factors and teenage pregnancy. Self-assessment of life assets can help us better understand the need for enabling and preventive factors among Thai teenagers and this understanding may help us prevent teenage problems, including teenage pregnancy.

MATERIALS AND METHODS

Subjects

A total of 172 female teenagers aged 12-19 years were included. The case group consisted of 86 pregnant teenagers who attended the Teenage Antenatal Care Unit at Siriraj Hospital. The control group consisted of 86 age-matched teenagers who were not pregnant, who had never been pregnant, and who studied at an educational institute located near Siriraj Hospital. Aside from pregnancy in the case group, inclusion criteria included a willingness to provide written informed consent, good use and understanding of Thai language, and willingness to fully comply with the questionnaire-based data gathering process. Exclusion criteria included any medical conditions requiring urgent medical care (e.g., unstable vital signs, vaginal bleeding, nausea and vomiting, or anxiety), inadequate Thai language skills, or an unwillingness to participate in any aspect of the study.

The protocol for this study was approved by the

Siriraj Institutional Review Board (SIRB), Faculty of Medicine Siriraj Hospital, Mahidol University. Protocol number Si. 177/2558 (EC4).

Procedure and measurement

The case group was selected from the patient population at Siriraj Hospital, as previously described. All 86 pregnant teenage case group participants were asked to complete the study questionnaires. The control group was then selected by multistage random sampling. The results of that process revealed that Dusitaram High School, Charansanitwong College, and Siam University would be the sources for recruitment of control group participants. Eighty-six age-matched control group participants were then selected by simple random sampling. Once enrolled, all control group participants were asked to complete the study questionnaires. The data collection was taken from 31 August 2015 to 30 November 2015.

Instruments

The research instruments consisted of 2 questionnaires – one for pregnant teenagers in the case group and 1 for non-pregnant teenagers in the control group. The first 3 sections of both questionnaires were identical, consisting of: Part 1) General information; Part 2) Information about family; and, Part 3) Information about life assets. Part 3 of the questionnaire was based on the life assets questionnaire developed by Suriyadeo Tripathi (More details in Appendix). Cronbach's Alpha for the life assets component of the questionnaire was 0.89. Part 4 of the questionnaire was different between groups. The questions in Part 4 given to case group participants focused on antenatal care service and pregnancy, while the questions in Part 4 given to control group teenagers focused on teenage sexual behavior, which were the sexual behavior questionnaire for teenagers with experience in sexual intercourse only. The questions composed of: the age at first sexual intercourse, the number of sexual partners, and preventive method during their sexual intercourse. Prior to distribution, both research questionnaires were checked and adjusted by 4 qualified experts for content validity to ensure that all aspects of both instruments were suitably designed for the populations being studied. The revised questionnaires were then tested in a group of 54 teenagers that had an age range of 12-19 years for reliability. The Cronbach's Alpha Coefficient was 0.775.

Statistical analysis

All statistical analyses were performed using SPSS Statistics version 20 (SPSS, Inc., Chicago, IL, USA). Demographic characteristics and summary of characteristics

for both groups are shown as number (percentage) or mean $\pm$ standard deviation (SD). Chi-square test was used to evaluate the relationship between demographic variables and teenage pregnancy. Unpaired t-test was used to compare mean life assets between pregnant teenagers in the case group, and non-pregnant teenagers in the control group. A p -value < 0.05 was regarded as being statistically significant.

RESULTS

Demographic factor data

The case group composed of 86 pregnant teenagers with average age of 17.07 years. Most of them studied in primary and secondary school level. The control group composed of 86 non-pregnant teenagers with average

age of 17.07 years, 88.4% studied in the high level of education (high school or diploma degree). Regarding the sexual behavior of the control group, most of subjects had never experienced sexual intercourse (61.6%). Among teenagers with sexual intercourse experience, 38.4% of them had first sexual intercourse at age of 15 or 16 and 83.4% of them used the condom to prevent pregnancy.

When comparing demographic factors relating to teenage pregnancy, we found that learning achievement, level of education, mother of teenager having first child at age < 20 years, family member having first child at age < 20 years, parent guardian, father's level of education, mother's occupation, family income, parents' relationship, family warmth, and smoking significantly affected teenage pregnancy (Tables 1-3). Most subjects in the case group

TABLE 1. Demographic factor data of study participants

Demographic factors	Case group (n=86) n (%)	Control group (n=86) n (%)	p-value
Level of education			
Primary / secondary school	57 (66.2)	10 (11.6)	0.000***
High school / vocational certificate	20 (23.3)	44 (51.2)	
High vocational certificate / university	9 (10.5)	32 (37.2)	
Mother of teenager having first child at age < 20 years			
Yes	30 (34.9)	16 (18.6)	0.016*
No	56 (65.1)	70 (81.4)	
Family member having first child at age < 20 years			
Yes	33 (38.4)	19 (22.1)	0.020*
No	53 (61.6)	67 (77.9)	
Main guardian			
Father/mother	59 (68.6)	75 (87.2)	0.003**
Other	27 (31.4)	11 (12.8)	
Father's level of education			
Uneducated	2 (2.3)	4 (4.7)	0.017*
Primary school – high school	76 (88.4)	61 (70.9)	
Associates degree or higher	8 (9.3)	21 (24.4)	
Mother's occupation			
Unemployed	23 (26.7)	15 (17.4)	0.035*
Farmer trade employee	58 (67.4)	56 (65.2)	
Civil servant / private company / officer	5 (5.9)	15 (17.4)	
Parents' relationship			
Smooth and happy	36 (41.8)	57 (66.3)	0.010*
Casual and unconcerned	9 (10.5)	7 (8.1)	
Estranged, chilly, and quarreling	11 (12.8)	4 (4.7)	
Separated but smooth	30 (34.9)	10 (20.9)	
Family warmth			
Yes	71 (82.6)	80 (93.0)	0.036*
No	15 (17.4)	6 (7.0)	
Smoking			
No	60 (69.8)	73 (84.9)	0.018*
Yes	26 (30.2)	13 (15.1)	

* = p -value < 0.05 , ** = p -value < 0.01 , *** = p -value < 0.001 indicates statistical significance

TABLE 2. Relationship between learning achievement and teenage pregnancy

Teenage pregnancy				Chi-	p-value
Learning achievement	Case group	Control group	Total	square	
(GPA)	(n=86)	(n=86)	(n=172)		
<2.00	14 (16.3)	1 (1.2)	15 (8.8)	33.809	
2.00-3.00	53 (61.6)	31 (36.0)	84 (48.8)		
>3.00	19 (22.1)	54 (62.8)	73 (42.4)		
Total	86 (100.0)	86 (100.0)	172 (100.0)		
df = 2	Contingency coefficient = .405				

* = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001 indicates statistical significance

TABLE 3. Relationship between family income and teenage pregnancy

Teenage pregnancy				Chi-	p-value
Family income	Case group	Control group	Total	square	
(THB/month)	(n=86)	(n=86)	(n=172)		
<10,000	32 (37.2)	6 (7.0)	38 (22.1)	29.935	0.000***
10,001 - 15,000	29 (33.7)	26 (30.3)	55 (32.0)		
15,001 - 20,000	7 (8.2)	23 (26.7)	30 (17.4)		
>20,001	18 (20.9)	31 (36.0)	49 (28.5)		
Total	86 (100.0)	86 (100.0)	172 (100.0)		
df = 3	Contingency Coefficient = .385				

* = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001 indicates statistical significance

had attained an educational level of at least primary school up to junior high school. Most subjects in the control group, however, had attained an educational level of at least senior high school/higher vocational school up to first or second year in university. Regarding learning achievement, most subjects in the case group had achieved a grade point average (GPA) of less than 3.01, as compared to a majority achieving a GPA higher than 3.01 in the control group. More teenagers in the case group than in the control group reported having a mother and/or a family member that had their first child at less than 20 years of age. Less teens in the case group than in the control group reported having their parents as their primary guardians. The number of teenagers who reported that their father had achieved a high vocational certificate/associate's degree or higher was higher among non-pregnant teens than among pregnant teens. Case

group teenagers reported a lower family income than non-pregnant control group teens. Regarding family environment, teenagers in the case group reported less warmth in their homes and having parents that were estranged, chilly, and quarreling more often than did control group teens. Case group teenagers also reported being smokers more than did participants in the control group.

Life assets data

The case group had high score of 69.87% in "power of family"; 80.62% in item of "feel safe at home" and 69.87% in item of "love, warm and support from family". The control group also had high score of 76.79% in "power of family"; 87.98% in item of "feel safe at home" and 82.95% in item of "learning support from family".

Mean life assets between the case and control groups

TABLE 4. Comparison of mean life assets between case group and control group

Life assets				T	p-value
Case group (n=86)		Control group (n=86)			
Mean	SD	Mean	SD		
87.65	22.68	94.70	17.45	-2.287	0.024*

* = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001 indicates statistical significance

were statistically significantly different (87.65 ± 22.68 vs. 97.40 ± 17.45 , respectively; $p=0.024$) (Table 4). Pregnant teenagers scored an excellent level of self-assessment (higher than 80%) in 1 item only, while non-pregnant teenagers scored an excellent level of self-assessment in 5 items. Non-pregnant teenagers met or exceeded the minimum assessment criteria in 34 items, while the pregnant teenagers met or exceeded the minimum assessment criteria in only 27 items. When comparing each item between groups, there were 16 questions for which the differences between groups were statistically significant. Non-pregnant teenagers achieved a higher percentage than pregnant teenagers for every significantly different item. Most items that were significantly different between groups were in the “power of self”, and “power of wisdom” assessment categories.

DISCUSSION

In this study, mean life assets were significantly higher in non-pregnant teenagers than in pregnant teenagers. This result was consistent with the reported findings from a study conducted by Search Institute¹³ that found that well-developed life assets in teenagers was inversely related to high-risk behavior. Non-pregnant teenagers achieved at least the minimum assessment criteria in 34 items in this study, while pregnant teenagers achieved at least the minimum in only 27 items. This result was similar to results from a study by Tripathi, et al., which evaluated differences in life assets between teenagers in juvenile detention homes and teenagers in the general population.¹⁴ In that study, the general population teenagers met or exceeded the minimum assessment criteria two times more often than did juvenile detention teenagers. In the present study, there were 16 questions for which there was a statistically significant difference between groups. Non-pregnant teenagers scored higher than pregnant teenagers in every significantly different item. In their study and consistent with our study, Tripathi, et al., found that the widest differences between groups

were in the “power of wisdom” and “power of self” life assets categories. General population teenagers in that study got higher scores than juvenile detention teens in every item and all of the differences were statistically significant. When considering each item in ‘power of self’ and “power of wisdom” from this study, the percentages of item assessment between general teens and pregnant teens were significantly different in 10 items. When considering in detail, the significant differences were found in items of regarding self-esteem, precise life goal, service mind, adaptation skill, love and attachment to the educational institute, consistent attention to the study, adherence to good behaviors, and courage to deny risky behaviors (sexual intercourse, addictive drugs, violence and bad media). The items in the very good criteria were “I want to have good academic results, not to take advantage of others, and share with others”. These positive personal attributes could help prevent the risk behaviors in teenagers, especially sexual behavior risk. When considering life assets standard criteria (Table 5), the results clearly showed that life assets reflected weak positive power among teenagers who need urgent and comprehensive assistance, because about 60% of pregnant teenagers achieved self-assessment scores lower than the standard criteria in 21 indicators, while another 20 indicators tended to be low. Although overall life assets reached 60 percent, it was recognized early that the case group was the at-risk group in this study. The authors want to make the point that, in general surveys, if any consistent results appear, they too should be of some concern and should warrant some added evaluation. Although non-pregnant teenagers tended to have better life assets than pregnant teenagers, the non-pregnant teenagers could not meet or exceed the minimum assessment criteria in 14 indicators (Table 5), which was consistent with other local and foreign research studies on life assets with findings that no groups of children have assessed the life assets highly in every aspect, either general group or group with risk behaviors.^{13,15} Those 14

TABLE 5. Life assets standard criteria

Standard criteria		Number of Item (n=48)					
Life assets level	(%)	Case group (n)	Case group (%)	Result	Control group (n)	Control group (%)	Result
Low	<60	21	43.75	Fail	14	29.16	Fail
Average	60-69	20	41.67	Pass	12	25.00	Pass
Good	70-80	6	12.50	Pass	17	35.42	Pass
Excellent	>80	1	2.08	Pass	5	10.42	Pass
		Number of Item < 60 % (Fail)		Average Percent			
Life assets		Case group	Control group	Case group	Control group		
Power of self		4 (19.05)	1 (7.14)	64.26	71.21		
Power of family		1 (4.76)	0 (0.00)	69.87	76.79		
Power of wisdom		4 (19.05)	4 (28.57)	60.75	65.54		
Power of peer and activity		4 (19.05)	2 (14.29)	56.01	61.24		
Power of community		8 (38.09)	7 (50.00)	49.32	48.26		
Total		21 (100.00)	14 (100.00)				

items were found in the “power of community”, “power of wisdom” and “power of peer and activity” sections of the questionnaire. Every teenager met or exceeded the minimum assessment criteria for every item in the “power of family” section of the questionnaire.

When considering and evaluating demographic factors that affect or relate to teenage pregnancy, it is clear that teenagers today live in a world teeming with rapid physical, mental, emotional, and social change. Teenagers are also energetic and confident, which can lead to high-risk behavior, like unprotected sexual intercourse, which often results in teenage pregnancy and school dropout.¹⁶ If teenagers are able to adjust to these changes with the support, monitoring, and advice of adults, in addition to the support mechanisms inherent in the educational system, teenagers are more likely to successfully overcome this difficult and complicated time in their lives. With these support systems, teenagers will be more likely to continue on to higher levels of study that will help them secure an occupation in the future.¹⁷ If teenagers, that are standing at this important turning point of life, are supported and encouraged to study for success, they will focus on their future by improving their intellect. Higher intellect in teenagers facilitates higher competence in cognitive processes, as well as the restraint process, problem-solution processing, and the use of reasoning to reject improper conduct, especially cognitive skills regarding sexual intercourse and teenage

pregnancy.¹⁸ Apart from factors specifically associated with the teenage years, environmental factors also have a significant effect on behavior, especially the effect of the family. In families where the parents raise children by themselves, children often receive love and warmth and will have feelings of trust, safe, and emotional attachment. Children from a warm and stable family will likely not feel the need to seek love from others or rely on others for these emotional needs all of which will result in more favorable teenage behavior.¹⁹ Current social conditions and economic demands often obstruct parents’ ability to bring up children by themselves. However, a good family upbringing and relationship can help to steer children away from risky behavior.²⁰ In addition, a positive pattern of behavior by family members can also have a positive effect on teenage behavior. It has been reported that positive modeling by the family can reduce improper behavior more than training and cultivation alone.²¹ Financial considerations play a key role in living conditions and the child-rearing process. In families where parents attain only low level of education, their jobs are often insecure and family income is often insufficient for comfortable living. In the current fast changing and competitive economic climate parents often spend most of their time earning a living for family survival, so they have less or no time for children, especially the essential time needed to love, guide, and carefully develop their children.²² Strength of this study was the

finding that life assets of both groups were different. Each item could also be utilized to prevent the teenage pregnancy in the future. However, the limitation of this study was constrained by time, so the number of samples was small, which could not make the data in some factors statistically different. For the further studies, the qualitative design should be conducted in the group of pregnant teenagers by focusing on the turning point of their decision to be pregnant or not to be pregnant. The study may be conducted in some important persons relating to pregnant teenagers, e.g. husband and parents of teenagers in order to find out their attitude towards teenage pregnancy and prevention.

CONCLUSION

Overall life assets were significantly higher among teenagers who had not experienced pregnancy. The risk factors that were found to be significantly associated with risk of teenage pregnancy in this study will help to facilitate preventive interventions and the development of policies and guidelines to control and perhaps reverse current trends in teenage pregnancy.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the staff of the Antenatal Care Clinic, Siriraj Hospital, and Dusitaram High School, Charansanitwong College, and Siam University for their non-financial support of this study.

Conflict of interest declaration

The authors hereby declare no personal or professional conflicts of interest regarding any aspect of this study.

Funding disclosure

This study was funded by a grant from the Master of Science Program in Child, Adolescent and Family Psychology, Faculty of Graduate Studies, Mahidol University, Bangkok, Thailand.

REFERENCES

1. World Health Organization. Adolescent pregnancy (Internet). (Updated 2014 Sep; cited 2014 Sep 25). Available from: <http://www.who.int/mediacentre/factsheets/fs364/en/index.html>.
2. Bureau of Policy and Strategy, Ministry of Public Health. Millennium Development Goals- MDGs (Internet). (Cited 2014 Sep 25). Available from: http://www.bps.moph.go.th/new_bps/sites/default/files/mdgreport2557.pdf.
3. Institute for Population and Social Research, Mahidol University. Thailandometers (Internet). (Cited 2014 Sep 25). Available from: <http://www.thailandometers.mahidol.ac.th>.
4. Department of health, Ministry of Public Health. Rights and access to reproductive health: Thailand to ASEAN (Internet). (Cited 2014 Sep 26). Available from: <http://www.anamai.moph.go.th>.
5. Women's Health Reproductive Rights Foundation of Thailand, Ministry of Public Health. Abortion statistics situation in the Thailand (Internet). (Cited 2014 Sep 26). Available from: <http://www.womenhealth.or.th/home-facts-abortion.html>.
6. Lewis LN, Hickey M, Doherty DA, Skinner SR. How do pregnancy outcomes differ in teenage mothers? A Western Australian study. *Med J Aust* 2009;190(10):537-41.
7. Coelho FM, Pinheiro RT, Silva RA, Quevedo LA, Souza LD, Castelli RD, et al. Major depressive disorder during teenage pregnancy: socio-demographic, obstetric and psychosocial correlates. *Rev Bras Psiquiatr* 2013;35(1):51-6.
8. Nuwong P. Factors affecting teenage pregnancy at Regional Health Promotion center 9 Phitsanulok (Internet). (Cited 2014 Sep 26). Available from: <http://hpc9.anamai.moph.go.th>.
9. Kamphaengphan S, Kaewpornawan T, Apinuntavech S. Psychosocial Factors Associated with Teenage Pregnancy Attending Antenatal Care Clinic at Siriraj Hospital. *J Psychiatr Assoc Thailand* 2011;56(3):255-66.
10. Tripathi S. Adolescent life assets. Bangkok: Duen Tula Printing House; 2012.p.6-13.
11. Great Lakes Center for Youth Development. Youth Asset Report (Internet). (Cited 2014 Sep 30). Available from: <http://www.search-institute.org/research>
12. Tripathi S. Life assets manual guideline. Bangkok: Appa Printing House; 2010: 5-50
13. Search Institute. What are developmental assets (Internet). (Cited 2014 Nov 1). Available from: <http://www.search-institute.org/research/developmental-assets>.
14. Tripathi S, Sughondhabirorn A, Sangtong P, Salajun S. Life assets's tool developmental project. *J Pediatr Assoc Thai* 2009;48(1):42-47.
15. Tripathi S, Sangtong P, Salajun S. The National survey of Life assets (Positive youth Development) of secondary school students in Thailand. *J Pediatr Assoc Thai* 2013;52:36-43.
16. Oluwole DA, Adeyemi MA, Oyebiyi DA. Predictive influence of factors predisposing Secondary school adolescents dropouts to sexual risk behaviour in Ogun State. *Ife Psychol* 2013;21(1): 361-86.
17. Anna MF, Greg R. High school dropouts: Interactions between social context, self-perceptions school engagement, and student dropout. *J Adolescent Health* 2012;35(4):787-98.
18. Linton KF, Rueda HA. Experiences with pregnancy of adolescents with disabilities from the perspectives of the school social workers who serve them. *Health Soc Work* 2014; 39(2):92-100.
19. Dilek S, Joan EG, Tulin G. Warm and harsh parenting as mediators of the relation between maternal and adolescent emotion regulation. *J Adolescent* 2013;36:1093-101.
20. Daphne B, Hanneke G, Ellen R, Maja D. Parents as moderators of longitudinal associations between sexual peer norms and Dutch adolescents' sexual initiation and intention. *J Adolescent Health* 2014;55:388-93.
21. Julie PF, Jungmeen KS. The development of adolescent self-regulation: Reviewing the role of parent, peer, friend, and romantic relationships. *J Adolescent* 2014;37:433-40.
22. National academy of sciences Washington DC. Strategies for Scaling Effective Family-Focused Preventive Interventions to Promote Children's Cognitive, Affective, and Behavioral Health: Workshop Summary (Internet). (Cited 2014 Oct 20). Available from: <https://www.iom.edu/Reports/2014/Strategies->

APPENDIX

Life Assets Questionnaire for Teenagers is based on the questionnaire developed by Suriyadeo Tripathi. Life assets consist of 5 powers as follows:

- Power of Self – 15 questions, which include Question 1-15
- Power of Family – 8 questions, which include Question 16-23
- Power of Wisdom – 11 questions, which include Question 24-34
- Power of Peer and activity – 6 questions, which include Question 35-40
- Power of Community – 8 questions, which include Question 41-48

The questionnaire consists of 48 questions with 4-rating scale alternative answers, including regularly, frequently, sometimes, and never. The scores for each answer are as follows:

Regularly	3	scores
Frequently	2	scores
Sometimes	1	score
Never	0	score

The percentage of each question in the Life Assets questionnaire is calculated by the following formula:

$$\begin{aligned} \text{Percentage of each question} &= \frac{\text{*Total scores of that question} \times 100}{\text{**Full scores of each question}} \\ \text{*Total scores of each question} &= \text{Sum of scores of each question} \\ \text{**Full scores of each question} &= \text{Number of sample group} \times 3 \end{aligned}$$

Interpretation of life assets scores is as follows:

Less than 60	percent means low life assets	(not pass)
60-69	percent means medium life assets	(pass)
70-80	percent means good life assets	(pass)
More than 80	percent means very good life assets	(pass)

Criteria of grading life assets in 4 levels by fixing the mean of each aspect and each question as follows:

Mean	0.00 – 0.75	means low life assets
Mean	0.76 – 1.51	means medium life assets
Mean	1.52 – 2.27	means good life assets
Mean	2.28 – 3.00	means very good life assets