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Does attachment to parents and peers influence health literacy among adolescents in Malaysia?

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ABSTRACT

Despite extensive research on the impact of social factors on the health literacy of adolescents, few studies have investigated how attachment to parents and peers influences adolescents' level of health literacy. Adolescence is generally viewed as the period of life before adulthood, and during this phase, young persons are dependent on the support of their parents and peers. This study was conducted in response to the gap in the research regarding the influence of parental and peer attachment on the health literacy of adolescents. The participants in this study comprised a random sample of adolescents aged 15 to 17 years, who were residents of the Klang Valley, a highly urbanized region in Malaysia. The study found that the level of health literacy among these adolescents was moderate ($M = 3.61$, $SD = 0.51$ on a scale of 5). While the level of peer attachment among them was moderate ($M = 3.48$, $SD = 0.58$), the level of parental attachment was high ($M = 3.73$, $SD = 0.83$ on a scale of 5). Both parental attachment ($\beta = 0.30$, $p < 0.05$) and peer attachment ($\beta = 0.37$, $p < 0.05$) were shown to have significant independent effects on the level of adolescents' health literacy. Together, parental attachment and peer attachment explained 30% of the variance in health literacy among adolescents.

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Introduction

Health literacy

Health literacy can be defined as the level of cognitive and social skills that reflect the ability of an individual to obtain, understand, and use health information when making decisions related to health care. The ability and desire to read and apply relevant healthcare information would

help to improve one's knowledge on health. Health literacy skills are needed for reading related-health information, interpreting labels of medicine, and using appropriate equipment for health care. People with low literacy level generally have little awareness of related-health education, limited knowledge about health services, and they might be unable to cope with chronic diseases [1, 2]. Low health literacy could eventually impact health and health care negatively, leading to poorer health outcomes [3, 4]. The relationship between the level of health literacy and the

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individual's level of health is becoming more distinct with increasing research in this area [5, 6]. Hitherto, studies on health literacy were mostly within a social context. There is, hence, a need for empirical research to look beyond individual-level health literacy skill assessments and patient-provider relations to consider the roles of family and community in health information attainment and decision-making [7, 8].

According to the World Health Organization [9], health literacy is associated with cognitive and social skills which determine the motivation and ability of the individual to gain access, understand, and use information in ways which promote and maintain good health [6]. Health literacy has now been expanded to include the importance of the social context in which health literacy occurs and its relationship with child health based on the caregiver's health literacy. Since adolescents are still developing the formative skills required to process health information, and their health-related knowledge and experience are limited, they have less autonomy than adults in making health-care decisions. Therefore, it would not be surprising if the health literacy of parents had a considerable impact on that of their adolescent offspring.

Gaps in the literature on health literacy

There is limited literature on the health literacy of Malaysian adolescents. For instance, Abdullah et al. [10] reported that from 1985 to 2017, there were only ten such studies in Malaysia; six of which were on general health literacy, two on medication literacy, and the remaining two on mental health. Health literacy has emerged as an important determinant of health, and a key component of self-care and patient-centered medicine. The latest Malaysian National Health Morbidity Survey in 2015 revealed that young adult health literacy level was ominously low. As there are significant gaps in the literature regarding health literacy awareness, especially among Malaysian adolescents, local research into health literacy is urgently needed. It is important to determine the current state of health literacy of specific segments of the adolescent population to fully understand their concept and determinants of health literacy.

Besides the limited literature on the level of health literacy of adolescents in the world in general, there is also a scarcity of data on the health literacy of adolescents in Malaysia. As noted in the *Country Health Plan Report 2011–2015* by the Ministry of Health, more effort is required to improve the community's health knowledge and the attitude of its members [11]. Ultimately, communities, families, and individuals must change their behavior in order to be healthier. This calls for an effective and coordinated long-term public education campaign to promote health literacy. By facilitating public access to health information and enabling its effective use, the problem of health literacy, especially among adolescents, could be addressed more effectively.

Many factors influencing the level of health literacy among adolescents have been brought up in past research. Peers and parents provide support for raising health awareness among young people. Manganello [12] and Rak

et al. [13] posit that their influences are among the main predictors to health literacy among adolescents. Findings from several researchers support Manganello's [12] view. For instance, a study by Heath et al. [14] on Australian adolescents revealed that families with low educational and socio-economic status, a family history of language/literacy difficulty, and low phonological awareness in parents could lead to poor literacy outcomes in children. Studies by Keim-Malpass et al. [15] and DeWalt and Hink [16] reported that children whose parents had low literacy often had worse health outcomes and these findings reaffirmed Manganello's view [12].

A current and contentious issue among researchers is whether parental and peer attachment directly influences both the psychological health and self-esteem of adolescents [17,18]. Furthermore, adolescent attachment to parents and peers and a sense of connectedness with the schools attended have been established as salient predictors of psychological well-being, especially health outcomes [19].

Several studies by Malaysian researchers have assessed the relative importance of each attachment or connectedness relationship, i.e. between quality of attachment to parents and peers in relation to adolescent well-being. A study by Hamzah et al. [20] found that parental and peer attachment had a positive relationship with religiosity among youth. In terms of trust and communication, Ramlah et al. [21] showed that students had stronger attachment to their parents than to their peers. A study by Mohamed et al. [22] reported that there were significant relationships between parental attachment, peer attachment, and institutional social bonding with positive youth development. However, no report is available on how parents and peers influence the level of health literacy of adolescents in Malaysia. Therefore, the present study is aimed at bridging the knowledge gap in this area. Examining adolescents' attachment to parents and peers – vis-à-vis their health literacy – might be particularly helpful in reducing health-related problems of Malaysian adolescents.

Parental and peer attachment influence on adolescent behavior

Adolescence is a transitional state of development for young people growing into adults. As adolescents are generally impressionable, it is important that their behavior and social skills are shaped toward a lifelong healthy lifestyle. With the rapid expansion of information technology today, it should be easier for them to gain access to and acquire the necessary knowledge to maintain and improve their own health. Adolescents' knowledge and attitude toward health issues might be influenced by how their parents and peers behave and, according to Mather et al. [23], the level of parental education also influences the level of health literacy. By understanding and improving health literacy at a young age, the adolescent of today can be an agent of change to help develop better health care systems in the future. Without adequate health literacy, young people may not know how to deal with their ailments, or how to make use of health services. They should be aware of the opportunities and approaches available to them to enjoy better health.

While warmth and tenderness between parents and adolescents facilitate positive development, the latter may also be strongly influenced by their peers through lifestyle practices of their age-group and through normative peer pressures [24, 25]. According to Van Ryzin et al. [26], during this phase, young people struggle to fit in among peers and they may spend more time with their friends rather than with their parents and family [20]. One piece of research suggests that adolescents can be influenced by their peers until at least the age of 20 through socializing [26]. As young people find their friends to be increasingly important for their social and emotional development, they tend to put their trust and loyalty in their peers. Thus, it is not surprising that adolescents may turn to their friends rather than to their parents for support or influence.

The theory in health literacy research that is relatable to this research is the social-ecological model [27]. This theory provides a framework for understanding how social determinants of health not only influence but also maintain health and health-related issues. It helps to identify promising points of intervention as well as to provide a better understanding of how social problems are created and sustained within and across the various subsystems. The social-ecological model presents a multi-level approach that incorporates individual factors, genetic and constitutional factors, social factors, and economic policies [28]. The multiple levels of influence of the social-ecological model, as proposed by Sallis et al. [29] include (a) the intrapersonal level, involving the characteristics that influence behavior, (b) the interpersonal level involving relationships with family, friends, and peers, and (c) the community level that involves institutional factors like rules and regulations, community factors, including social networks and public policy factors, including laws and regulations.

Overall, health literacy is a product of individual, social, and environmental factors that are mediated by education, culture, and language [8, 30]. For example, the healthcare professional may choose to discuss health-related topics with friends and families or to use social media at an interpersonal level. The need for direct relationships in child development varies as the child ages, passing through the phase of adolescence toward adulthood. Armsden and Greenberg [31] distinguish three dimensions in which young people maintain an attachment with their parents and peers. They are (a) the degree of mutual trust, (b) the quality of communication, and (c) the extent of anger and alienation. This is because adolescence is a period during which needs and behaviors can be reshaped and redefined before they fully set in upon maturity. Taking into consideration these crucial dimensions, this study places much emphasis on the micro system, with parental and peer attachment as variables that influence adolescents' health literacy level in Malaysia.

Material and methods

Population and sample

The target population for this study was 15–17 years-old adolescents in secondary day schools. At the time

of writing, there were approximately 100 000 students enrolled in 90 secondary day schools in the Klang Valley region. Two phases of sampling techniques were used in selecting the respondents.

In the first phase, cluster sampling technique was used in the selection of secondary day schools. Out of 90 secondary day schools, only 8 schools participated in this study. Permission letters were sent to the principals of the participating schools to conduct the survey which had received approval from the Ministry of Education. The selection of these schools was based on the response and permission given by the principals within the survey period from May to July 2017. A total of 506 students were selected as the study sample ($M_{age} = 16.1, SD = 0.467$). This number exceeded the minimum sample for a population of this size suggested by Krejcie and Morgan [32] using the formula, $n = \chi^2 NP(1 - P)/d^2(N - 1) + \chi^2 P(1 - P)$. The population size (N) for this study is 100 000 students and the $n = 384$. Population proportion was assumed to be 0.50; the survey was carried out with a significance level of 5% and the degree of accuracy was 5%. Taking into consideration outliers' cases that could affect the findings of this study, 20% additional respondents were added to the sample size.

In the second phase, a simple random sampling was used in the selected secondary schools. A survey was carried out using a self-administered questionnaire. This study employed a captured group approach. During the data collection at each participating school, all respondents were gathered in a classroom. The respondents were asked to fill out the questionnaire on their own. Verbal consent was acquired from the respondents who were assured that their responses would be treated with strict confidence.

Dependent and independent variables

The selection of the variables was based on past research and supported by empirical findings on the influence of parental and peer attachment on health literacy of adolescents. In this study, the dependent variable was health literacy and operationalized as the ability to perform knowledge-based literacy tasks, i.e. the capacity to acquire, understand and use information to promote and maintain good health. The independent variables were parental and peer attachment, and operationalized as the positive, affective, and cognitive experience of trust and communication in the accessibility and responsiveness of attachment figures of parent and peer, respectively. Both parental and peer attachment qualities have been shown in past studies [31, 33] to be associated with psychological health and adjustment in adolescence. Moreover, adolescents are more likely to have high self-esteem when their parents are supportive and interested in their activities; conversely, they have low self-esteem when their parents are perceived as rejecting them [34]. Likewise, peer attachment is also a significant factor in predicting self-esteem. According to Mota and Matos [35], higher levels of communication and trust in peer relationships are associated with the development of self-esteem and coping skills. For example, working together with others in school activities will encourage the adolescent to develop a positive relationship with others,

and as such they know they will be able to get help when making decisions.

In this study, adolescents are operationally defined as secondary day school students aged between 15 and 17 years. They are diverse qualitatively in terms of culture, expectations, exposures, opportunity, and different from those in other types of schools, such as boarding and smart schools as well as religious schools [36].

Research instrument/measures

This study employed two research instruments, namely the European Health Literacy Survey and Inventory of Parents and Peer Attachment.

The first study instrument, the European Health Literacy Survey (HLS-EU-Q47), consists of 47 items that measure three dimensions of health literacy, specifically health care (action taken to seek care), health promotion (action taken to increase control over one's health), and disease prevention (action taken to prevent the onset of illness/disease) [37]. This survey instrument is used to measure the influence of parental and peer attachment on adolescents' level of health literacy. The HLS-EU-Q usage is not limited to study samples in clinical settings but may include community groups in the general population like school students in this study.

The respondents were asked to respond to the perceived difficulty of each item using a 5-point Likert scale (1 – very difficult, 2 – difficult, 3 – easy, 4 – very easy, and 5 – don't know), with a possible lowest mean score of 1 and a possible highest mean score of 4.

The second study instrument was the research instrument of Inventory of Parents and Peer Attachment (IPPA) by Armsden and Greenberg [31]. This research instrument consists of 18 items to measure the dimensions of trust and communication. Respondents were asked to provide their responses based on a five-point Likert scale, ranging from (1) "strongly disagree" to (5) "strongly agree".

A pilot study was conducted to assess the reliability of the study instrument. The generated values of Cronbach alpha for the study dimensions were all greater than $\alpha = 0.70$, specifically, health care ($\alpha = 0.829$), health promotion ($\alpha = 0.820$), disease promotion ($\alpha = 0.822$), trust ($\alpha = 0.869$) and communication ($\alpha = 0.829$). This study employed only content validity. Our assumption was that the researchers had developed good operational definitions of the study constructs to formulate relevant items that were adapted from Sørensen et al. [38] and Armsden and Greenberg [31] to evaluate the level of parental and peer attachment with regard to health literacy of adolescents.

Results

Descriptive analysis

A total of 506 Malaysian adolescents participated in the study. Their ages ranged from 15 to 17 years, with a mean age of 16.1. A slightly higher percentage of female adolescents (56.3%) participated in this study than males

(43.7%). Most of them were Malays (68.2%), followed by Indians (18.8%) and Chinese (13%). About equal proportions of these adolescents were city (50.1%) and suburban (49.9%) residents. A higher percentage of their parents earned less than RM 3000 monthly (39.6%) compared with parents who earned RM 3001–RM 5000 (30.2%) or more than RM 5000 (30.2%). The demographic profiles of the respondents are shown in Table 1.

Table 1 – Demographic profiles of the respondents (n = 506)

Demography	Frequency	Percent (%)
Age		
15	19	3.8
16	385	76.1
17	102	20.2
Gender		
Male	221	43.7
Female	285	56.3
Ethnicity		
Malay	345	68.2
Chinese	66	13.0
Indian	95	18.8
Residential		
City	254	50.1
Suburban	252	49.9
Parents' salary (per month)		
Less than RM 3000	200	39.6
RM 3001–RM 5000	153	30.2
More than RM 5000	153	30.2

Level of health literacy, peer and parental attachment among adolescents

Table 2 shows that the respondents displayed a moderate level of peer attachment ($M = 3.48$, $SD = 0.58$) and health literacy ($M = 3.61$, $SD = 0.51$), and on the other hand, the respondents displayed a high level of parental attachment ($M = 3.72$, $SD = 0.83$).

Table 2 – Level of peer and parental attachment, and health literacy among adolescents (n = 506)

Variable	Mean	SD
Peer attachment	3.48	0.58
Parental attachment	3.72	0.83
Health literacy	3.61	0.51

Scale: Low, 1.00–2.33; Moderate, 2.34–3.66; High, 3.67–5.00.

Bivariate correlation

The relationships of each peer and parental attachment with health literacy level were analyzed using the Pearson Product-Moment Correlation. Cohen's [39] categorization on effect size was also used to interpret the magnitude of the correlation between the study variables. Preliminary analyses were performed to ensure that there were no violations of the assumptions of normality and linearity.

Table 3 depicts a moderate and positive correlation between peer attachment and health literacy ($r = 0.50$, $n = 506$, $p < 0.05$). With regard to the relationship between parental attachment and health literacy, the results similarly showed moderate and positive correlation ($r = 0.43$, $n = 506$, $p < 0.05$). Hence, these results suggested that the stronger the adolescents' attachments with parents and peers, the higher their levels of health literacy.

Table 3 – Bivariate correlations between independent and dependent variables

Variable	Health literacy	Peer attachment	Parental attachment
Health literacy	1.00		
Peer attachment	0.50 ^a	1.00	
Parental attachment	0.43 ^a	0.38	1.00
Values are correlation coefficients.			
^a Significant at $p < 0.05$ level.			

Regression analysis on predictors of health literacy among adolescents

The data were further analyzed using the multiple regression analysis with the forced entry method (Table 4) to identify the predictors to health literacy level among the adolescents. In determining the extent, the research data fitted the proposed multiple linear regression model. It was found that parental and peer attachment levels explained a significant amount of the variance accounted for by health literacy ($F_{(2,503)} = 109.76$, $p < 0.05$). The multiple correlation (R) value obtained was 0.55. The coefficient of determination, $R^2 = 0.30$, suggested that 30% of the variance in health literacy level among adolescents was explained by their attachment to peers and parents.

As depicted in Table 4, the beta coefficient for peer attachment ($\beta = 0.37$) was larger than parental attachment ($\beta = 0.30$). This suggests that the peer attachment variable made a stronger contribution in explaining the dependent variable (health literacy level among adolescents). As peer attachment increased by one standard deviation, the level of health literacy increased by 0.37. In contrast, as parental attachment increased by one standard deviation, the level of health literacy increased by 0.30. Attachment to parents and peers was a significant predictor of health literacy for the adolescents who participated in this study.

Discussion

This study found that the level of health literacy was significantly associated with both parental and peer attachment. Peer attachment and parental attachment both had a moderately positive correlation with the level of health literacy among adolescents. The results, therefore, showed that parental and peer attachment influenced the level of health literacy among the adolescents. This result was consistent with the Bronfenbrenner's Ecological Theory, which posits that adolescent behavior is influenced by both parents and peers. In particular, friends of adolescents have a direct influence on health literacy as well as health behavior, given their growing prominent role in the lives of youth during the transition into adulthood [12].

All the presented study findings are congruent with the ecological theory by Bronfenbrenner [28] who explains that the closest and most influential persons to have direct contact with adolescents are their parents and peers. This theory posits that the developing child is surrounded by layers of relationships. The importance of the various levels of ecological influence has been widely studied to determine their influence on individual growth and behavior. The innermost layer, the micro system, describes the immediate environment in which the child is immersed. Hence the child's development has a direct relationship with people considered significant to him or her, such as parents, peers, and teachers [40].

Attachment relationships between parents and adolescents serve to imprint behavior and attitude inclinations in the latter, starting from infancy and extending into adolescence and adulthood [41]. Parental monitoring and parent-adolescent closeness in interaction are some ways in which parents may influence their children's health literacy. Close bonding and continual communication between parents and their children go a long way toward encouraging adolescents to turn to their parents for information, guidance or advice on health. By sharing information with their children, parents may also help to prevent or reduce their exposure to health risks. According to WHO [9], the intervention of supportive parents in early childhood development is a crucial step in improving global healthcare.

These findings also showed that the operationalization of health literacy in three dimensions as applied in European Health Literacy Survey (HLS-EU-Q47) namely health care, health promotion, and disease prevention –

Table 4 – Predictors of health literacy among adolescents

Factors	Beta (unstandardized coefficients)	Std error	Beta (standardized coefficients)	<i>t</i>	Sig.
Constant	1.808	0.124		14.534	0.000
Peer attachment	0.325	0.035	0.370	9.204	0.000
Parental attachment	0.180	0.025	0.300	7.295	0.000
$R = 0.55$, $R^2 = 0.30$, $F = 109.76$, $p = 0.000$.					

is relevant to understanding the phenomenon of health literacy level among the secondary day school students in this study.

The findings of this study also revealed that health literacy among the selected young people in Malaysia was moderate ($M = 3.61$). The result may indicate that the health programs and activities arranged (i.e. Physical and Health Education school subjects) by the Ministry of Education Malaysia and Ministry of Health Malaysia helped adolescents increase their access to, as well as understand healthcare and application of health-related practices. Most of the organized programs and activities were conducted in schools, with student participation being compulsory. For example, a recent program, *My Health Risk Evaluation*, focused on the fact that “prevention is better than treatment”. The main idea was to encourage adolescents to learn about health risk factors that could lead to chronic diseases and the steps to take to prevent them. Another program, *Ease of Risk Assessment*, assessed adolescent health status and risk of disease, prevention and education, with relevant health-related advice offered through internet channels. Hence, besides learning from parents and peers, such programs also help to raise health literacy among school students.

The results in this study were similar to those from surveys undertaken previously by the Ministry of Youth and Sport. Based on the Youth Malaysian index (IBM) in 2015, a moderate score was obtained across seven indicators (viz. no suicidal tendencies, no depression, no worries, no pressure, perceptions of body weight, non-smoking, and eating habits). As in other countries, there is certainly room to improve the level of health literacy in Malaysia. The data from the *European Health Literacy Survey* by Sørensen et al. [38] showed that nearly half of the Europeans surveyed had inadequate or problematic health literacy. Weak health literacy skills were associated with riskier behavior, poorer health, less self-management and more hospitalization and costs. Strengthening health literacy has been shown to build individual and community resilience, help address health inequities, and improve health and well-being.

Even though health literacy has been defined in many different ways in this paper, it is basically related to competencies of accessing, understanding, appraising and applying health-related information for better health care, disease prevention, and health promotion settings. This study is useful to policy-makers and curriculum-planners for a better understanding of the level of health literacy and is of significance to the well-being of adolescents in Malaysia.

WHO [9] defines adolescents as persons between 10 and 19 years of age. Since this cohort made up 18.0% of the total population in 2015 in Malaysia [42], adolescent health issues are vital national concerns. Hence, the Ministry of Health, Ministry of Education, and Ministry of Youth and Sports, as well as other private institutions and non-government organizations such as Malaysian Mental Health Association, Malaysian Association for Adolescent Health, and Malaysian AIDS Council are actively involved in addressing health issues of adolescents. Many programs and activities have been organized by these agencies

to cater for adolescent development, specifically their healthcare needs.

The Ministry of Health Malaysia introduced the National Adolescent Health Policy in September, 2001. This policy focuses on health services, counseling, and education for youth. The policy seeks to promote and ensure the development of adolescents so that they are aware of the responsibility for their own health, as well as empower them with knowledge and skills to adopt robust, healthy lifestyles through active participation in various programs [11]. Besides that, the Malaysian Association for Adolescent Health [43] also advocates education to maintain high standards of health care for young people. Adolescents are encouraged to participate actively in the activities of the association to facilitate the promotion of their own health and that of their communities. These activities include the annual National Symposium on Adolescents, Health Learning Market and Professional Opinion for Youth (POYO).

Limitations of the study

The instrument for this study was a self-reported questionnaire, with respondents answering the questionnaire themselves under the supervision of the researchers. As the results from the survey were subjective in nature, bias in the respondents could not be eliminated completely. The study was also limited to two predictors, viz. parental and peer attachment in influencing health literacy. The other limitation was that as the survey was conducted in only eight schools in the Klang Valley area, the results cannot be generalized to other adolescents in other regions of Malaysia.

Conclusions

Health literacy level was moderate among the sampled adolescents in Malaysia, this being consistent with the Malaysian Youth Index data released by the Ministry of Youth and Sports Malaysia in a 2015 survey. Parental attachment and peer attachment positively influenced the level of health literacy among the adolescents. The present study can help policy-makers focus on the promotion, prevention, and networking system by implementing more practical aspects of health care. As there is a paucity of literature in the area of adolescents and health literacy relationships conducted abroad, the present study contributes to the knowledge base of a research based on a Malaysian context.

Based on the findings of this study, only 30% of the variance in health literacy level among adolescents was explained by their attachment to parents and peers; there could be different results in the relationships between the independent variables and dependent variable if different respondents were employed. Future research also could incorporate other variables such as access to health information sources through social media, the support of education of health in school, and the role of community in the investigation of factors that influence the level of health literacy among adolescents.

Conflict of interests

The authors have no conflict of interests to declare.

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