Assessment of Nutritional Status of Children Under-Five in Families of Adolescent Mothers in Indonesia 2013

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Summary
Early marriage has become a worldwide problem and so does nutritional status of children under five. Adolescent mothers is not ready to be married in terms of reproductive health or mentally. Early marriage contributes to the poverty cycle and also helplessness in woman. That many studies on the factors associated with the nutritional status of children under five. However, it is still rarely done in Families of adolescent mothers. This article aims to discuss factors related to nutritional status in children under five. Research design Cross-Sectional with logistic analysis (chi-square test) to 978 samples. Samples are families of adolescent mothers of children under-five. The nutritional status assessment based on, weight for height, weight for age, height for age. This study showed mental emotional disorder of adolescent mother, related with underweight (weight for age; $p=\text{sig } 0.005$) and stunting (height for age; $p=\text{sig } 0.012$). Another factor, wich related with nutritional status (weight for age) is clean and healthy behaviors of mother ($p=\text{sig. }0.024$). Clean and healthy life behavior is a disease prevention program. Variables included in multivariate analysis are, father’s occupation, economic status, immunization status, mom’s clean and healthy behaviors and mom’s mental emotional disorder. Interaction test results, there is no interaction, between mental emotional disorder variable of mother, and father’s occupation. The significant factor that related with malnutrition is mom’s mental emotional disorder. Underweight, stunting, wasting, closely related to clean-healthy behaviors and mental-emotional disorder of adolescent mothers.

Key Words
stunting, underweight, nutritional status, mental disorder, clean and healthy behaviors

It should be realized that early marriage was a world issue, although gradually began to decrease. Five largest countries, with an incidence of early marriage namely Sub-Saharan African countries (Nigeria, Chad, Central African Republic, and Guinea and Bangladesh). More than 60% of women were married before they reached the age of 18 y. Nigeria has the highest rate of child marriage in the world, one in three girls married before reaching the age of 15, and 75% of women were married before the age of 18. Indonesia has mentioned in this report reached 22%. Globally, about one out of 10 girls in the world to get married before the age of 15 y (1).

Basic Health Research (Riskesdas 2010) shows that Indonesian women recorded married at age 10–14 y as much as 4.8% and was age 15–19 y as much as 41.9% (2).

As a result of a child, marriage is the cycle of poverty and powerlessness in women, they are also vulnerable to violence, abuse and forced sexual intercourse, sexual and reproductive health worsens, and increased illiteracy and lack of education (3). Further said, that early marriage affects the physical or psychological child. This is due to the condition of the female reproductive organs not yet functioning optimally so that it will affect the conditions of their children. Generally, they are not ready to be a mother. They didn’t take care of the children and unable to control emotions.

The case in the Sawojajar village, Wanasari, Brebes, Central Java, there are several factors causes child marriage, the following: (a) socio-cultural environmental factors, the view of an elderly maid, (b) the factors of parents, the existence of an arranged marriage, (c) factors of themselves because they feel already established to be married (4).

The age limits of Adolescents are quite varied. Adolescent age limits facilitate the classification of the development and growth ages seen from a person’s chronological age. It is because of the assumption of increasing age, that more differentiation occurs in the age of development. According to Santrock, the limits of adolescence were early adolescents 12–15 y and late adolescence 15–18 y (5). WHO said, the age limit of adolescents were those aged 12–24 y old. While the RI Minister of Health in 2010, set a limit at the age of the adolescents are women aged 10–19 y (6).

Child marriage is very likely to have problems in allowing parenting. Because the age of adolescents is still searching for identity, moreover emotions in adolescents are still unstable. If in adolescence age already
have children, those situation implies for development and growth disorders, as well as nutritional status of their children. Some cases that occur, related to parenting, causes of malnutrition cases and the role of the mother are as follows: there are any 77% children under-five with normal nutritional status, whereas the practice of good category parenting feeding was 94%, psychosocial stimulation of 96%, and health care amounted to 94%. That’s case showed, in the district of Tanjung Pura, Langkat, North Sumatra (7). Further, it is said, there is a significant relationship between the practice of feeding and health practices with nutritional status. However, psychosocial stimulation with nutritional status is unrelated. The case of West Sumatra (8) showed high levels of poverty and low education is the biggest risk in malnutrition. While the case in the village of Mungkur Island, Kuantan-Singgingi island, Riau (9) shows the knowledge of mothers in fulfillment of nutrition toddler categories less well 71.1%. Mother’s attitude in fulfillment of nutrition toddler categories less well 82.2% and mother action in fulfillment of nutritional toddler categories less well 82.2%.

Studies on the health and nutritional status of children under five have been conducted. Factors are related to them, in families with adolescent mothers, are rarely analyzed. Especially by including the emotional-disorder in the teen-mother. From the explanation above, arises a question what factors most affect the toddler nutritional status maternal age are still teenagers? as well as how the analysis is needed to provide information that describes the facts as supporting policy? this analysis, aims to answered that question.

MATERIALS AND METHODS

Ethical approval was obtained from the ethical committee of the National Institute of Health for R and D. Informed written consents were obtained from respondents before the study commenced.

Study instrument. The instrument for obtaining the dependent and independent variable data based on basic health research 2013 instrument. The dependent variable is the nutritional status of children under-five. The nutritional status classification based on weight for age, height for age, weight for height. Independent are, characteristics, mental-emotional disorder, and clean-healthy behaviors of parents. Characteristics including, economic status, age, education and profession of parents. The other factors were health status and immunization of children under-five.

Economic status based on index classification according to the Central Bureau of Statistika Indonesia. There is any five quintiles of indexed. Quintile is an economic status based on ownership. Data collected included 12 variables. The index forming variables are: 1) the main source of water for drinking, 2) cooking fuel, 3) ownership of defecation facilities, 4) toilet types, 5) fecal landfills, 6) lighting sources, 7) motorcycles, 8) Television, 9) water heater, 10) the gas cylinder as a cooking fuel size 12 kg, 11) refrigerators, and 12) cars. With the PCA (Principal Component Analysis) technique, the indexes that have been formed are grouped into 5 quintiles: bottom, lower-middle, middle, upper-middle, and top (quintile 1, 2, 3, 4 and 5). The economic status based on the ownership index illustrates that the higher the Household quintile, the more durable goods it has (10). Composite economic status carried out into low category, including group 1, 2, and 3 quintile. High category, 4 and 5 quintile.

Low education variable includes an elementary school and junior high school. High education variable if they finish senior high school and university. Job classification, based on having a job and jobless.

Emotional Mental Disorder variables, were assessed with Self Reporting Questionnaire (SRQ-20), which consists of 20 questions (10). This Questionnaire consists of 20 question about momentary emotional state (± 30 d before and after the interview).

SRQ include: 1) Does [NAME] often suffer from headaches? 2) Does [NAME] find it difficult to enjoy daily activities? 3) Does [NAME] not have an appetite? 4) Is [NAME] difficult to make decisions? 5) Does [NAME] have difficulty sleeping? 6) Is [NAME]’s daily work interrupted? 7) Is [NAME] easily scared? 8) Is [NAME] unable to do useful things in life? 9) Does [NAME] feel tense, anxious or worried? 10) Does [NAME] lose interest in various things? 11) Does [NAME]’s hands tremble? 12) Does [NAME] feel worthless? 13) Is [NAME] digestion disturbed/bad? 14) Does [NAME] have thoughts to end life? 15) Is [NAME] difficult to think clearly? 16) Does [NAME] feel tired all the time? 17) Does [NAME] feel unhappy? 18) Does [NAME] experience discomfort in the stomach? 19) Does [NAME] cry more often? 20) Does [NAME] get tired easily?. The optimal Cutoff point are 8 score. Responden answers ‘yes’, to 8 questions, it is indicated as having an mental emotional disorder, at risked.

Clean and healthy life behavior is one of the government programs. This is a health promotion activity, to prevent diseases, called PHBS. Clean-healthy behaviors were asked to the children under five’s parents. The variable composites include, washing hands if they are dirty, before preparing the food, after changing the children’s diaper, after the respondent defecates, after using pesticide/insectiside. If respondents answer no, to all these questions, then the Clean-healthy behavior variable is risked, including at the level of poor behavior. Health status of Children under five’s can be defined as susceptibility to disease, if in a month before interview the children under-five had symptoms of illness, such as diarrhea, respiratory tract infection, and fever. That condition, are classified at risk, and the others are healthy. Immunization variable in children under-five are complete the children under-five gets basic immunization (BCG, DPT HB_Combo, Polio, Measles) according to the children’s age. There has two categorical, incomplete and complete.

Study design. The analyzed data were basic health research data in 2013 (RISKESDAS 2013). That is a survey with cross sectional design. The population were all household that represent 33 province in Indonesia.
The analyzed sample were 978 data of household with children under-five and adolescent mother, around 10–19 y old. The analyzed process includes data completeness screening, making variable composites and analysis. Design analysis was cross sectional research design. Data analysis using logistic (chi-square test).

**RESULTS**

**Respondent characteristic**

Table 1 shows the youngest mother is 12 y old, and the oldest is 19 y old. According to WHO, those are the age that is not mentally stable and the reproduction is not ready to have a child (6). Meanwhile, the youngest father of children under-five are 16 y old and the oldest are, 51 y old. The most age group are in the productive age in a range of 20–30 y old (80.4%). In the meantime, the average number of education is until junior high school both of the mother or the father.

**Relationship between nutritional status of children in teenage families**

Table 2 shows the prevalence of stunting in young families almost double the WHO standard, while underweight and wasting approach 20%. Table 2 also shows the result of analysis by using chi-square, in all nutritional status categories of children under five. Generally, characteristic dependent variable (economic status, age, education, and profession) are not related to nutritional status. Similarly, with a status of health and immunization. Clean and healthy behaviors of the parents also didn’t related to nutritional status, except on nutritional status based on weight for age(underweight). Those categories, shows there are significantly associated. There is an association, between adolescent mothers clean and healthy behavior and underweight ($p=0.024$). Adolescent mothers who were poor behavior in Clean and healthy practices, had the opportunity to have underweight children 0.272 times compared to children who had mothers with good healthy behavior.

The Emotional mental disorder of adolescent mothers, associated with the nutritional status of the child, in both categories, weight for age and height for age (underweight and stunting). The results of Crude and Adjusted logistic analysis in Table 2, shows the status of Emotional-Mental-Disorder adolescent mother is risked, has a chance of the child becoming underweight 0.289 times compared to normal mothers, at reference CI: 0.121–0.690. Meanwhile, they will also have a chance of stunting children by 0.313 times, at the interval of CI interval: 0.120–0.813.

Table 2, shows the dependent variable which related the nutritional status of children under-five based on weight for age, is an emotional disorder of adolescent mother and clean-healthy behaviors. Both of these variables are significantly related to acute nutritional status (weight for age) because the statistical $p$-value is $\leq0.005$. However, the behavior of unclean and healthy on adolescent mothers of children under five, only has a chance of 0.289 times, having underweight children. There was a difference between clean and healthy adolescent mothers with mothers who didn’t.

| Variable | $n$ | % |
|----------|-----|---|
| Quintil household/economic status |     |   |
| Quintil 1 (bottom level) | 263 | 26.9 |
| Quintil 2 (lower-middle level) | 245 | 25.1 |
| Quintil 3 (middle level) | 213 | 21.8 |
| Quintil 4 (upper-middle) | 149 | 15.2 |
| Quintil 5 (top level) | 108 | 11.0 |
| Age of mothers |     |   |
| 12–15 | 20 | 2 |
| 16–19 | 958 | 98 |
| Mothers education level |     |   |
| Never been to school | 21 | 2.1 |
| Not completed in primary school | 109 | 11.1 |
| Graduated from elementary school | 294 | 30.1 |
| Graduated from junior high school | 387 | 39.6 |
| Graduated from high school | 165 | 16.6 |
| Graduated from Diploma | 2 | 0.2 |
| Mother’s occupation status |     |   |
| Civil servant/army/police/state-owned enterprise (SOE) | 7 | 0.7 |
| Private employees | 19 | 1.9 |
| Entrepreneur | 28 | 2.9 |
| Farmer | 103 | 10.5 |
| Labor | 18 | 1.8 |
| Others | 33 | 3.4 |
| House wife | 770 | 78 |
| Age of father |     |   |
| 16–19 | 77 | 7.9 |
| 20–30 | 786 | 80.4 |
| 31–40 | 101 | 10.3 |
| 41–50 | 12 | 1.2 |
| >50 | 2 | 0.2 |
| Father’s education level |     |   |
| Never been to school | 27 | 2.8 |
| Not completed in primary school | 98 | 10 |
| Graduated from elementary school | 278 | 28.4 |
| Graduated from junior high school | 300 | 30.7 |
| Graduated from high school | 255 | 26.1 |
| Graduated from Diploma | 11 | 1.1 |
| Graduated from University | 9 | 0.9 |
| Father’s occupation status |     |   |
| Civil servant/army/police/state-owned enterprise (SOE) | 15 | 1.6 |
| Private employees | 136 | 14.8 |
| Entrepreneur | 169 | 18.4 |
| Farmer | 319 | 34.8 |
| Fisherman | 52 | 5.3 |
| Labor | 187 | 20.4 |
| Others | 120 | 12.3 |

Unhealthy and clean behaviors of adolescent mothers include a small proportion of both underweight and normal status (1.1% and 4.1%). Mothers who experience emotional mental disorders, almost 90% occurred in both groups underweight and normal status.

Candidate variables that entered the multivariate
analysis were mental-emotional disorders of adolescent mothers, clean and healthy behavior of adolescent mothers and fathers’ employment status ($p=0.25$). The healthy living variable has a $p$-wald 0.9 ($>0.05$), the variable was not included in the next analysis. The remaining two variables have a log-likelihood of $<0.05$. The interaction test results did not show an interaction between the emotional disturbance variables on the work status of mothers and fathers. So that a significant factor associated with underweight is an emotional disturbance in emotional mothers ($p=0.004$). Effects of Emotional Mental Disorders at risk for mothers do not have a difference in the level of father’s work, either unemployment or employment.

Table 2 gives information about the dependent factor which related to the nutritional status of children under-five based on height for age. Emotional disorder variable in adolescent mothers related to the nutritional status of children under-five height for age categories ($p=0.012$). It can be said, that there are differences between mother with an emotional disorder and not. The chance of having stunting children in an adolescent mother with an emotional disorder is shown in the odds ratio of 0.313 with a reference of 0.120–0.813.
Table 2 shows the relationship between dependent factors and nutritional status of children under-five based on the weight for age classification. There are no significant factors related. However, in terms of characteristics, the proportion of risk variables are greater than those that are not at risk, it is found in the variables of economic status and mother’s occupation. Wasting in the low economic group was 109 (70.8%) out of 154 children. Children under-five with housewife mothers are 120 (77.9%). Likewise in the condition of children under-five, wasting get sick for 30 d before the interview, as many as 84.4% while wasting didn’t sick was 15.6%.

**DISCUSSION**

The clean and healthy behavioral factors in adolescent mothers are significantly related to the nutritional status of children based on weight for age. Some studies also illustrate, the relationship between clean and healthy behavior and the nutritional status of children under-five. The results of a study similar to this analysis, mentioned by Putri AO, there is any relationship between health practice and nutritional status (11). Immature and not ready behavior causes lack of awareness of cleanliness. The lack of hygiene very risky to transmitting diarrhea diseases. This has a direct impact on nutritional status that is acute, especially affecting the child’s weight if the child has diarrhea. Another analysis states that there is a significant relationship between the diarrheal disease in children under-five with nutritional status based on the weight for age indicator (12).

Emotional disorders factors, were associated with nutritional status based on the classification of weight for age and height for age. Emotional mental disorders of mother, affect to the nutritional status, in acute and chronic. Emotional mental disorders in mothers are obtained based on WHO standard SRQ-20. The questions include changes in mood, personality, personal habits or social withdrawal. Mothers experience mental emotional disorders, if they answer “yes” from the 20 questions. Cut of point 8 is used to differentiate mothers who experience disruption and those who didn’t. Some studies show that the sensitivity of the cut of point is 92.9% and specificity 97.4% detects depression in female groups in Mongolia (13). Likewise, SRQ used in research in developing countries, 7/8 cut of point still shows sensitivity 66.7% and specificity 84.6%. That its, researched to women in Cape Town, South Africa (14). The data also prove, that women are more prone to mental emotional disorders than men (15).

Some studies show the interrelationships between the emotions of parents and childrens (16). The other hand, emotional disorder are also related to the body’s metabolism, such as hormone formation, carbohydrates, protein and etc (17–19). Based on the analogy, then, if the child’s emotional development is disrupted, it should be suspected that metabolism in the children under-five’s body is also disturbed. This situation could be, an impact on the nutritional status of children.

Maternal depression was associated with early childhood underweight and stunting (20).

Health conditions of children under-five and immunization were not associated with nutritional status of children under-five. Although the results of other studies show the relationship between morbidity and nutritional status of children under five (18). It should be suspected, because the mother is still a teenager, causing the role of the closest person, very dominant in parenting. Especially in decision making. Several studies show that young women are difficult in making decisions (21).

Characteristics (economic status, age, education, occupation) of the family of children under-five were not related with nutritional status, in all indicators. However, several journals mention family characteristics related to nutritional status of children. Stunting has a significant relationship with economic status (22, 23). As in Thailand shows toddlers who live in poor families, tend to be stunted (24). This situation is due, in teenage families who early married, generally, were still supported economically by their parents. Qualitative studies mention, the recognition of young mothers who still depend on the economy for their parents (25). On the other side, early marriage occurs due to economic factors. Adolescents were married to rich men, they hoped of reducing the burden of the young woman’s family (26).

It is interesting here, because economic factors are not related to nutritional status of children. The multivariate test results also showed that the effects of emotionally disordered mothers and those without emotional disorders did not differ between father’s work status, work or not. Indirectly, in this case emotional disorders are not caused by economic factors, but other factors. In other studies shows that determinate factors of emotional disorders in adolescents include physical violence, verbal abuse/humiliation and comfortness in school (3, 27). Teenager in 13–14 y old, also have risk of depression symptoms, if parents give harsh verbal discipline (28).

The analysis used 3 anthropometric index (weight for age, height for age, and weight for height). The weight for age index is acute in assessing the current nutritional status, whereas height for age looks at the past of nutritional status. The weight for height index is used to screen underweight status of children under-five (29, 31).

Indicators of weight for height are also acute, it was condition in a short time. Child’s weight, quickly falls causing disproportionate height and weight and than, becomes underweight (30). Indicator weight for height, besides being used to describe acute nutritional status, is also used as the indicators of obesity. Table 2 does not appear to be the dependent variable associated with nutritional status based on weight for height. This is possible, because dependent factors didn’t have a direct impact, on nutritional status based on these indicators. Table 2 is a prevalence analysis in young families, showing stunting of 44%. While Indonesia’s national figures...
in the same year, the prevalence of stunting reached 37.2% (10). This value is almost the same as the prevalence rate in Yemen, which is 47% (31). However, Rikimaru T said that Indonesia was still in the medium classification, among other Asian countries. Analysis based on Indonesian stunting data for 2008–2012 (32).

CONCLUSION

The clean and healthy behavioral factors in adolescent mothers are significantly related to underweight status. The opportunity to have underweight children 0.272 times compared to children who had mothers with good healthy behavior. Emotional mental disorder of adolescent mothers, associated with underweight and stunting. The status of an adolescent mother’s Emotional Mental Disorder is risked, has a chance of the child becoming underweight 0.289 times. Meanwhile, they will also have a chance of stunting children by 0.313 times. There were no related factors for wasting status.

Recommendation

Existing of Maternal and Child Health Program, at health center, should be equipped with mental health counseling services. The Promotion of clean and healthy behavior must be intensified than before. Likewise, prevention of early marriage.

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