



A Structure Model of Family Empowerment in Preventing Smoking Initiation among Adolescent: An Empirical Study Conducted in Urban Area of Indonesia

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Abstract

BACKGROUND: Family empowerment is a critical component for smoking prevention efforts among adolescents. Few information regarding the family empowerment model developed in preventing smoking initiation among adolescents in Indonesia.

AIM: The aim of this study was to identify determinants of the family empowerment model in preventing smoking initiation among adolescents in Indonesia.

METHODS: A cross-sectional research design was used for families with adolescent girls and boys (aged 10–14 years) in West Java, Indonesia. The convenience sampling procedure was employed. The study analyzed family demands and parenting stress as stressors. Family resources were divided into family functioning and communication process. The perception or judgment factor was assumed as parenting efficacy. Family empowerment has been identified as an indicator of adaptation. Structural equation modeling was used for data analysis.

RESULTS: The survey respondents consisted of 175 respondents. The mean age was 40.56 (SD = 11.73) and 57.2% had graduated from above high school. These findings suggest that family demands and parenting stress have an indirect effect on family empowerment through parenting efficacy, family functioning, and communication processes. The contribution of the effect of family demands, parenting stress, parenting efficacy, family function, and communication process on family empowerment was 68%.

CONCLUSION: The family empowerment could be defined in the Double ABCX model in the prevention of smoking in adolescents and that the numerous adverse effects of stress can be modulated through parental efficacy as well as the ability to function of the family and communication. It recommends making family interventions an integral part of public health initiatives for the prevention of smoking initiation, as well as health policy formation.

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Introduction

About 31 million people around the world die every year due to smoking each year. Nearly 90% of current cigarette smokers begin smoking just before age of 18 [1], and early initiation of smoking has been linked to a higher risk of adverse health effects and early death [2]. Recent data show in Indonesia that the prevalence of smoking is high; about 52% of people aged 15–19 have ever smoked cigarettes and 23.1% of those aged 10–14 have smoked [3]. Smoking during adolescence is a complex activity affected by a variety of personality traits, cultural norms, and social media networks [4], [5], [6]. During this phase, adolescents are primarily interested in their own identity, and status within their social circles, leading to a lot of influence from their peers. In the absence of peer influence, this might happen: adolescents may be more likely to pick up smoking habits to obtain recognition.

Empowerment is critical component of smoking prevention efforts that should be underscored in order to

best inform family and adolescents in preventing smoking initiation and to advocate for tobacco control [7], [8]. Empowered parents have access to resources, abilities, and facilities that could be used to enhance their children's health and prevent their children from the risky behaviors such as smoking [9], [10]. The ecological model is emphasized, in which families are not just recipients of education but also seek to improve their problem-solving abilities [11]. In this context, family empowerment helps in facilitating parenting, which is associated with an increase in parentchild confidence, which is critical for smoking prevention. The study also shows a strong relationship between enhanced levels of family empowerment and better child and parent outcomes and improve problem-solving skill (Martínez *et al.*, 2009; Farber and Maharaj, 2005; Graves and Shelton, 2007). In addition, family empowerment approaches have been used to promote health outcomes among adolescent, such as aimed at preventing smoking, which has shown promising approaches [12], [13], [14], [15].

The Double ABCX model highlights the importance of families' ability to tolerate stress due

to additional personal growth (including adolescent smoking). The model depicts family stress as a product of individualistic or internal inputs interacting with cognitive components, such as the family's perceptions of the source of stress [16]. As a result, stressors like family demands and parenting stress are expected to have an effect on family empowerment and adjustment, which will be influenced by interpretation or judgment factors and family resource variables (parenting efficacy and family resilience). According to the Double ABCX model, adjustment to stress is contingent upon four components: the accumulation of stressors in terms of the initial crisis; current capabilities and recently designed resources to address the crisis; parents' expectations of the very first two factors; and the result in contexts of adjustment to the crisis.

The present study aimed to identify determinants of family empowerment model in preventing smoking initiation among adolescents. We hypothesized that family demands and parenting stress as stressors. While family functioning, parenting self-efficacy, and communication process as a family resource and mediating variables for the association between family demands and parenting stress with family empowerment.

Methods

Design and setting

A cross-sectional research design was used from June to October 2019 in West Java, Indonesia. The research was conducted in Bogor, West Java, Indonesia. Bogor in one of the big cities in West Java, Indonesia that close the capital of Indonesia, namely Jakarta. A list of schools published by the Ministry of Education via official website with the figures showing its growing in frequency. The schools were further divided into groups based on their form (private or public).

Participants

This study was conducted to the mothers of adolescents in Bogor, West Java, Indonesia.

The sample consisted of mothers with adolescent girls and boys (aged 10–14 years). Students who were absent from school during the study period were excluded, as were those who were intellectually disabled and rejected the offer to participate in the study. The sample size was determined by calculating the root-mean-square approximation error (RMSEA). The convenience sampling procedure was employed.

Instrument

Demographics data

The research instrument was the self-administered questionnaire which consisted of personal information parent age and education, household monthly income, number of children, father and children current smoking status. Current smoking is defined as smoking for at least one day in the last 30 days.

Family demands

The questions on family demands were based on the studies [17] consisted of 38 questions assessed the demand of information support, social and economic support, description of others, and education and school support. The instrument has been forward-backward translated into Bahasa Indonesia. The content validity ratio (CVR) was 0.80 and content validity index (CVI) were 0.83. The internal consistency reliability coefficients for the data were 0.814.

Parenting stress

Parenting stress was measured using Parenting Stress Index [18]. A total of 24 questions (12 for children aspect and 12 for parent aspect) was assessed level of stress. The instrument has been forward-backward translated into Bahasa Indonesia. The CVR was 0.81 and CVI were 0.87. The internal consistency reliability coefficients for the data were 0.873.

Parenting self-efficacy

The parenting self-efficacy was measured using the Parenting Sense of Competence Scale [19]. A total of 16-items with a 6-point Likert scale, indicate parent agreement with a number of statements concerning their degree of assurance and satisfaction in handling out their parenting role (1 = strongly agree, 6 = strongly disagree). The answers are added together to generate a total score that ranges from 16 to 96. Higher scores indicate greater self-efficacy in parenting. The instrument has been forward-backward translated into Bahasa Indonesia. The CVR and CVI were both 0.85. The internal consistency reliability coefficients for the data were 0.892.

Family functioning

Family functioning was measured using The Family Assessment Device [20]. A total of 61 questions with 4 Likert scale. The results range from 1 to 4, with a higher mean demonstrate higher distress. The instrument has been forward-backward translated into Bahasa Indonesia. The CVR was 0.86 and CVI were 0.85. The internal consistency reliability coefficients for the data were 0.749.

Communication process

The questions for the communication process were based on the studies [17] consisted of 16 questions on 2 factors, including 8 questions on clear communication and expression of emotion, and 8 questions on smoothness and attitude of communication and problem-solving. The instrument has been forward-backward translated into Bahasa Indonesia. The CVR was 0.76 and CVI were 0.78. The internal consistency reliability coefficients for the data were 0.866.

Family empowerment

Family empowerment was measured using a Family Empowerment Scale [10]. Participants rate items on a 5-point Likert-type scale from 1 (never) to 5 (very often). Responses are summed to create a Total Service Sub- Scale Score, which range from 12 to 60. Higher scores indicate higher levels of empowerment. The instrument has been forward-backward translated into Bahasa Indonesia. The CVR was 0.85 and CVI were 0.87. The internal consistency reliability coefficients for the data were 0.91.

Procedure

The researcher visited educational institutions and gave newsletters to the families that explained the aim of the study and sought the permission of their parents or families to participate in the survey. Permission was obtained from the director of the relevant facility to gather data in order to protect the respondents' human rights. The survey participants who completed a written consent form were informed about the participation specifics and survey questionnaires by the researchers. The questionnaire was distributed to 200 families that volunteered to participate in the survey. After excluding 5 (2.5%) due to incompleteness, a total of 175 (87.5%) returned questionnaires were used for the analysis.

Data analysis

The characteristics of the participants were analyzed using frequency analysis and mean (SD). Cronbach's alpha was calculated for each variable. The model was confirmed using discriminant and confirmatory factor analysis. To measure the model fit, this model used the chi-square, the goodness of fit index (GFI), root mean squared residual (RMS), and comparative fit index (CFI) RMSEA. The model's indirect effect was confirmed using effect decomposition. The current study analyzed the convergent validity and discrimination in order to check the reliability and validity of the measured objects. To determine discriminating validity, we quantified average variance extracted (AVE) using the Fornell and Larcker (1981)

method and compared the square root to the coefficient of correlation of the variables [21]. IBM SPSS Statistics 23.0 and LISREL were used to analyze data.

Results

Table 1 presents the characteristics of responses. The survey respondents consisted of 175 respondents. Among the respondents, the mean age was 40.56 (SD = 11.73) and 57.2% had graduated from above high school. The average monthly household income was \$ 206.89 (SD = 14.29) and number of children was 2.56 (SD = 0.19). About 51.4% of father was reported currently smoking smoked and 41.7% of their children was smoked too.

Table 1: Demographic characteristics of studied participants (n = 175)

Variables	n (%)
Parent age in year, Mean ± SD	40.56 ± 11.73
Parent education level	
Below senior high school	75 (42.8)
Above senior high school	100 (57.2)
Household monthly income (USD), Mean ± SD	206.89 ± 14.29
Number of children, Mean ± SD	2.56 ± 0.19
Father Current smoking	
Yes	85 (48.6)
No	90 (51.4)
Children smoking	
Yes	73 (41.7)
No	102 (58.3)

Table 2 shows that each measured concept had significant and considerable standardized estimates (λ). All concepts showed that the composite reliability was >0.6. The AVE also exceeded the reference value of 0.5

Table 2: Results of the confirmatory factor and reliability analysis

Variables	Factors	Standardized estimate(λ)*	AVE	Composite reliability	Cronbach's alpha
Family demand	Information support	0.618	0.768	0.783	0.814
	Social support and economic support	0.587			
	Description of others	0.513			
	Education and school support	0.719			
	support	0.697			
Parenting stress	Child domain	0.802	0.811	0.801	0.873
	Parent domain	0.755			
Parenting efficacy	Overall parenting ability	0.85	0.726	0.889	0.749
	Health parenting ability	0.612			
	Communication ability	0.534			
	Learning instruction ability	0.567			
Family functioning	Discipline ability	0.525	0.728	0.889	0.866
	Problem solving	0.751			
	Communication	0.811			
	Role	0.734			
	Effective response	0.675			
	Affective involvement	0.714			
	Behavior control	0.627			
Communication process	Clear communication and expression of emotion	0.768	0.760	0.837	0.901
	Smoothness and attitude of communication, and problem-solving	0.764			
Family empowerment	System advocacy	0.672	0.760	0.837	0.901
	Knowledge	0.611			
	Ability	0.784			
	Self-efficacy	0.734			

Standardized Estimate; AVE: Average variance extracted.

in all concepts, and the α of Cronbach was exceeded by the reference value of 0.7. These findings show that each calculated value met the criteria for convergent validity.

Table 3 shows the findings of correlation between variables. Family demands ($r = 0.574$, $p = 0.001$), parenting efficacy ($r = 0.573$, $p = 0.001$), family functioning ($r = 0.480$, $p = 0.001$), and communication process ($r = 0.577$, $p = 0.001$) had a statistically significant positive correlation with family empowerment; indicating that a higher degree of family empowerment in preventing smoking initiation among adolescent was associated with higher levels of family demands, parenting tension, parental efficacy, family functioning, and communication process. A significant inverse correlation between family empowerment and parenting stress was found ($r = -0.612$, $p < 0.001$), which suggests that the more distressed families are, the less empowered they are.

Table 3: Correlation analysis between variables

Variable	X ¹	X ²	X ³	X ⁴	X ⁵	X ⁶
Family demand (X ¹)	0.631					
Parenting stress (X ²)	-0.220*	-0.734				
Parenting efficacy (X ³)	0.358*	0.352*	0.817			
Family functioning (X ⁴)	0.276*	0.425**	0.219*	0.787		
Communication process (X ⁵)	0.381*	0.211*	0.263*	0.325*	0.695	
Family empowerment (X ⁶)	0.574**	-0.612**	0.573**	0.480**	0.577**	0.735

(**): $p \leq 0.001$; (*): $p \leq 0.05$.

Figure 1 shows the results of testing the conceptual model developed based on the Double ABCX model. In the conceptual model, stressors were consisted of family demand and parenting stress. Resource comprises family functioning and the communication process; and the judgement factor comprises parenting efficacy. The adaptation factor was family empowerment.

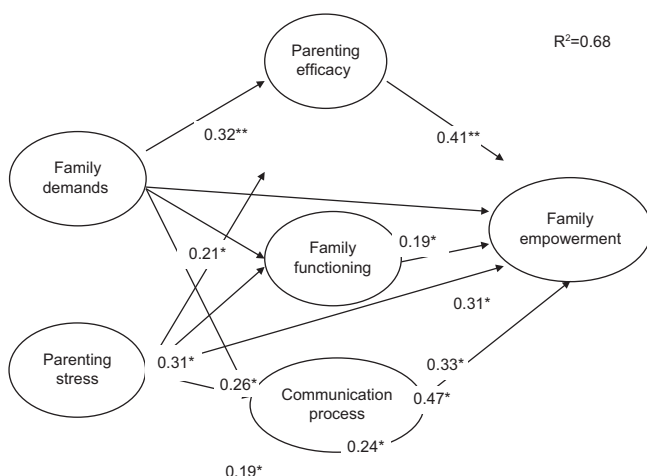


Figure 1: Path diagram of family empowerment model for adolescent smoking in Indonesia

Table 4 displays the structural equation modeling analysis of family empowerment model for adolescent smoking. According to the fit statistics, the conceptual model's fit was found to be fair: $\chi^2 = 386.412$ ($p = 0.00$, $df = 143$), $GFI = 0.845$, $NFI = 0.831$, $CFI = 0.897$, $IFI = 0.899$, $RMR = 0.057$, $RMSEA = 0.089$. Family

Table 4: Summary of standardized direct, indirect, and total effects of independent variables toward family empowerment

Variables	LVC	β	Effect (%)		
			Direct	Indirect	Total
Family demand	0.429	0.103*	4.43	1.97*	4.43*
Parenting stress	0.122	0.240*	5.74	1.54*	6.98**
Parenting efficacy	0.662	0.436**	28.8*	12.37	35.2*
Family functioning	0.385	0.214*	5.19	3.30*	7.57
Communication process	0.596	0.345*	20.6	7.67*	23.6
Goodness-of-fit statistics	$\chi^2 = 386.412$ ($p = 0.00$, $df = 143$), $GFI = 0.845$, $NFI = 0.831$, $CFI = 0.897$, $IFI = 0.899$, $RMR = 0.057$, $RMSEA = 0.089$				

(**): $p \leq 0.001$; (*): $p \leq 0.05$.

demand and parenting had significant total and indirect effects on family empowerment, but not direct effects. These findings suggest that family demands and parenting stress have an indirect effect on family empowerment via parenting efficacy, family functioning, and communication processes. Researchers found that the direct and total effects of parenting efficacy on family empowerment to be significant, but the two aspects of the communication process and family functioning were not. The contribution of the effect of family demands, parenting stress, parenting efficacy, family function, and communication process on family empowerment was 68%.

Discussion

Parenting stress was found to have a negative impact on family functioning, communication, and parenting efficacy. This study supports the Double ABCX hypothesis [22]. However, family demands were not found to be a stressor, which contradicted the Double ABCX model. This is consistent with the findings of Han's studies [17], which found that families who engaged in family support services had higher family empowerment. In addition, family involvement may be seen as reflecting a willingness to help raise mentally and physically healthy and developmentally challenged children, which in turn indicates a higher level of parenting participation.

Families had both resource capacity and capability effects on the expansion of their children's level of adaptation, but resource effects were the source of the perceived gain in the power to act in families, which proved to be a positive correlation. Nonetheless, the impact on the increase in family resources such as functioning and communication, on which was negligible at first, has increased significantly over time. This finding is partly in agreement with a previous study [23] report, which emphasizes the necessity of building up family esteem through perceptions of subjective well-being and response to positive life events. The results show that parenting efficacy increases the sense of empowerment within the family because it also offers possible solutions to stress-filled challenges.

The findings showed that increasing parenting efficacy has an indirect positive impact on family

empowerment in preventing the initiation of smoking in adolescents. Even though parents' level of stress inevitably decreases the quality of their parenting, it has a beneficial impact on families. This supports the Double ABCX model [24], which states that the impact of a stressor on the factor of adjustment is moderated by the perceived notion of personal judgment factor and is concurred with the study conducted by previous study [17]. Confidence in self-efficacy plays a role in determining certain actions. This belief then provides direction for actions taken by humans. This includes how to provide a self-assessment of abilities, skills, and resources; goal selection; and determining choices for problem-solving [25]. The results imply the necessity of social support that matches the family's interests. By creating a model that includes the specific variables that influence families' empowerment in preventing the initiation of smoking in adolescents, it will be helpful in resolving issues. Theoretically, such a model may be used to create a variety of intervention services to help families in preventing the initiation of smoking in adolescents.

The overall results of this study can be interpreted that to empower families in preventing the initiation of smoking in adolescents, a positive foundation for self-efficacy is needed so that it will form confidence in the cognitive abilities of families in analyzing health needs. To be able to realize the empowerment of the family, a positive communication pattern is needed as a bridge to the realization. So that if all factors are conducive, in addition to a more harmonious family, it can also produce adolescents who are independent, intelligent, able to control their behavior, and be able to select and make decisions of the actions chosen without being disturbed by the pressures of the surrounding environment, including negative peers. This is consistent with the finding [26] that self-efficacy describes individuals' beliefs about their ability to exercise control over the demands of a challenging environment. All of these findings are predictive factors that could be used as a reference for the development of family-based empowerment programs. Family environment has the most direct and lasting impact, not only in education and psycho-intellectual development but also in shaping values, attitudes, and behavior. It is believed that tobacco intakes are mostly studied at home; and as such, effective methods for controlling tobacco must first target the home environment namely the family [27]. The recommendations for scientific development from this research are a qualitative exploration of other factors that have not been studied for the stages of family empowerment in preventing the initiation of smoking in adolescents so that it can be applied more. The formulation of health policy with a family empowerment approach specifically for the prevention of smoking initiation, and also health issues in general, is a further recommendation of this study.

Limitation

While these findings and implications should be taken into consideration, this research study has a major limitation due to the fact that it examines just the school in one city while Indonesia has 34 provinces with more than 100 cities. Furthermore, this research is only focusing on families with children aged 10–14, as the data showed that the smoking prevalence is higher among adolescent aged group. This is the main limitation to doing a study on the environment that has to be considered: to collect and compile the country's environmental data, as well as family data, will be necessary in the future.

Conclusion

The findings showed that family empowerment could be defined in the Double ABCX model in the prevention of smoking in adolescents and that the numerous adverse effects of stress can be modulated through parental efficacy as well as the ability to function of the family and communication. This research suggests the need for interventions that assist families in managing stress and providing social support for effective parenting. The results of this study indicate that public health interventions should concentrate on offering effective strategies for reducing tension in families. In particular, strengthening factors such as parental efficacy, familial functioning, and the communication process contribute to empowering the family would then reduce stress in families and inhibit adolescent smoking. The findings presented in this study are exploratory with regard to other facets of family empowerment strategies that have not been systematically investigated for keeping smoking onset from occurring in adolescents. It recommends making family interventions an integral part of public health initiatives for the prevention of smoking initiation, as well as health policy formation.

Ethics Approval and Consent to Participate

The study was approved by the International Review Board of the affiliated university (045/ETIK/2019) and carried out in compliance with the Helsinki Declaration. Furthermore, permission was also granted by the Ministry of Health and Research in West Java for the information to be gathered. An informed consent was obtained. The confidentiality and privacy of all personal identifiers have been maintained during the entire study period.

Availability of Data and Materials

The data that support the findings of the current study are available from the corresponding author on request.

Authors' Contributions

MH and AN designed the study, recruited the participants, conducted data collection analyzed the data, and wrote the manuscript. MH and AN contributed to the design of the study, and manuscript writing. All authors contributed, read, and approved the final manuscript.

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