

2016 APCBEES BALI CONFERENCE ABSTRACT

June 25-27, 2016

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Table of Contents

2016 APCBEES Bali Conference Introductions	5
Presentation Instructions	7
Keynote Speaker Introductions	8
Brief Schedule for Conferences	17
Detailed Schedule for Conferences	18
Session 1	
S0002: Measurement of Antioxidant Activity and Structural Elucidation of Chemical Constituents from <i>Aglala oligophylla</i> Miq. <i>Yunle Yeap Soon Yu, Nur Kartinee Kassim, Khalid Hamid Musa, and Aminah Abdullah</i>	19
S0005: Biochemical Properties of Emir Grape Polyphenol Oxidase as Affected by Harvest Year <i>M. Ümit Ünal and Aysun Şener</i>	20
S0007: The Levels of Serum Thyroid Hormone in Sturgeon Populations <i>Jiangqi Qu, Chengxia Jia, Pan Liu, Mu Yang, and Qingjing Zhang</i>	21
S0008: Low Socioeconomic Status among Adolescent Schoolgirls with Stunting <i>Sitti Patimah, Andi Imam Arundana, Ida Royani, and Abdul Razak Thaha</i>	22
S0009: Inulin-Enriched Low Fat Milk Improved Lipid Profile in Indonesian Hypercholesterolemic Adults <i>Fidella, Lina Antono, Astri Kurniati, and Susana</i>	23
S0014: Formation and Cumulation of CO ₂ in the Bottles of the Fermented Milk Drinks <i>Bojana Danilović, Lorenzo Cocola, Massimo Fedel, Luca Poletto, and Dragiša Savić</i>	24
S0016: NUCHIFIVE (Nutrition Application for Children Under Five Years) <i>Intan Ayu Ningkisiwari, Bintang Mareeta Dewi, and Feri Andriani</i>	25
S2003: Development of Gluten-Free Pasta (Sevaiya) Using Grape Pomace and Assessing its Quality and Acceptability <i>Hiral Savla and Veena Yardi</i>	26
Session 2	
S1004: Health Promoting Potentials of Selected South African Indigenous Leafy Vegetables <i>George G, Ganjifrockwalla F, and Gqaza BM</i>	27
BS-S0002: Precise Measurements of Short-term Memory Function about Periodic Motions <i>Kyota Aoki, Yuki Yamada, and Hisanori Hotta</i>	28

BS-S0006: An Android-Based Pregnancy Predicting System	29
<i>Dony Novaliendry, Yang Cheng-Hong, and Li-Yeh Chuang</i>	
BS-S1003: The Suitability and Efficacy of Perioperative Antibiotics in Relation with the Surgical Wound after Appendectomy	30
<i>Eka Amelia, Bambang Arianto, and Anita Purnamayanti</i>	
BS-S1006: Biocompatible Film Made from Silkworm Cocoon	31
<i>Tjokorda Gde Tirta Nindhia, Zdenek Knejzlik, Tomas Ruml, Tjokorda Sari Nindhia, and I Wayan Surata</i>	
BS-S1007: Antibiotics Efficacy Analysis on Diabetic Foot Ulcer Inpatients	32
<i>Irma Susanti, Bambang Arianto, and Anita Purnamayanti</i>	
BS-S2001: In vitro Synergistic Effects of Snail Slime and Chitosan against Staphylococcus Aureus	33
<i>Agnes Sri Harti, Estuningsih, Heni Nur Kusumawati, Siswiyanti, and Setyaningtyas</i>	
BS-S2002: The Synergistic Effects of Areca Nut Extract and Chitosan toward Candida Albicans in Vitro	34
<i>Rahajeng Putriningrum, Anis Nurhidayati, Tresia Umarianti, Kartika Dian Listyoningsih, and Wahyu Rima Agustin</i>	
Session 3	
CE051: Design of Photovoltaic –Thermal (PV/T) for Building Integrated Photovoltaic Systems	35
<i>Syafaruddin, Satriani Latief, and Wahyu H. Piarah</i>	
W0001: Performance Efficiency and Design Criteria of a Peat System for Treating Septic Tank Effluents	36
<i>Mohd Elmuntasir Ebrahim Ahmed and Abdallah Abusam</i>	
W0005: The Pulse Electromagnetic Fields Effect on pH and Heavy Metal of Water	37
<i>Novan Agung Mahardiono, Hanif Fakhurroja, Veny Luvita, and Sudaryati Cahyaningsih</i>	
W0007: Adsorption of Humic Acid from Aqueous Solution onto PMMA Nanofiber: Kinetics Study	38
<i>Muhammad Ali Zulfikar, Afdal Bahri, and Muhammad Nasir</i>	
W0008: Removal of 2-Bromophenol by Advanced Oxidation Process with <i>In-situ</i> Liquid Ferrate(VI)	39
<i>Fajar Budi Laksono and Il-Kyu Kim</i>	
W0009: Multivariate Statistical Technique for the Evaluation of the Environmental factors and the Cyanobacteria Population in Nakdong River, South Korea	40
<i>Kyeong-deok Park and Il-kyu Kim</i>	
W0010: The Hydrogeology Volcanic Base on Volcanic Facies Groundwater Chemical Content and Stable Isotope Groundwater	41
<i>Mohamad Sapari Dwi Hadian, Hendarmawan, Nana Sulaksana, and Fikri Noor Azy</i>	

2016 APCBEES BALI CONFERENCES	
W1003: Hydrologic Alteration in Watershed Using Flow Duration Curve, Case Study Upper Citarum Watershed, Indonesia	42
<i>Hadi Nurcahyo, Indratmo Soekarno, Iwan K. Hadihardaja, and Arief Rosyidie</i>	
Session 4	
BS-S0007: Comparative Analysis of NLS Sequence Suggests the Evolutionary Origin of Nuclear Matrix Metalloproteinase 7 during Cancer Evolution	43
<i>Diyora Abdukhakimova and Yingqiu Xie</i>	
BS-S0011: Rooted Tree Optimization Algorithm for Protein Folding Prediction	44
<i>Cheng-Hong Yang, Yu-Shiun Lin, Li-Yeh Chuang, and Hsueh-Wei Chang</i>	
BS-S0012: An Application of Expert System for Diagnosing Fever Caused by Viral Infection	45
<i>Oktoria, Cheng-Hong Yang, and Li-Yeh Chuang</i>	
BS-S0013: Ion Motion Optimization Algorithm Applied to CpG Island Prediction	46
<i>Cheng-Hong Yang, Ying-Jui Hao, and Li-Yeh Chuang</i>	
BS-S0014: Breast Cancer Risk Prediction Using Ions Motion Optimization Algorithm	47
<i>Cheng-Hong Yang, Kuo-Chuan Wu, and Li-Yeh Chuang</i>	
BS-S0015: Identification of SNP-SNP Interaction Using Entropy-based Multifactor Dimensionality Reduction in Case-Control Studies	48
<i>Cheng-Hong Yang, Cheng-Han Wu, and Li-Yeh Chuang</i>	
BS-S1002: Functional Hotspot Discovery Using 3D Chromatin Configuration Reconstructions	49
<i>Mark Segal</i>	
BS-S3001: Lower Ratio of Collagen's Fibre Type III/Type I and Higher Tensile Strength of Healing in Injured Achilles Tendon in Rabbit Treated with Astaxanthin	50
<i>Krisna Saputra I Komang Agus, Astawa I Putu, Mulyadi Ridia K G, and Nindhia Tjokorda Gde Tirta</i>	
One Day Visit & Tour	51
Conference Venue	53
APCBEES Forthcoming Conferences	54
Note	56
Feedback Information	57

Afternoon, June 26, 2016 (Sunday)

Time: 13:00~15:00

Venue: Gianyar Room

Session 1: 8 presentations-Topic: "Food Science & Biochemistry"

Session Chair: Prof. Helmut Zarbl

S0008 Presentation 4 (13:45~14:00)

Low Socioeconomic Status among Adolescent Schoolgirls with Stunting

Sitti Patimah, Andi Imam Arundana, Ida Royani, and Abdul Razak Thaha

School of Public Health Universitas Muslim Indonesia

Abstract—In the accelerating decline of maternal mortality, health and nutritional status of adolescent schoolgirls should get more concern by all stakeholders due to adolescence could break intergenerational cycle of poor nutrition in the future. Social and economic aspects are one of the important determinants that influence health and nutritional status adolescent schoolgirls. This study aimed to assess the influence of social-economic factor in the incidence of stunting in adolescent schoolgirls using a cross sectional study design. Subject of the study were 601 of 10th grade girl students in five high schools in Maros district. To determine the stunting in adolescent schoolgirl used height-for-age indices (<-2 SD HAZ-score). SPSS version 18 was used to analyze the data. The prevalence of stunting was 23.6%, found more in subjects who had siblings ≥ 2 persons (91.5%), a large family more than 4 people (73.2%), low income family (69.1%), and low education fathers (62.4%) as well as lower education mothers (68.3%). However, only the number of siblings was significantly associated with the incidence of stunting in girls based on the chi-square test ($p=0.008$). It was concluded that adolescent schoolgirls who were stunted from lower socioeconomic groups. Therefore, socioeconomic empowerment of the family should be an important point to address the problem of chronic malnutrition in adolescent schoolgirls.

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The effect of multimicronutrients supplementation of preconception women on pregnancy status and its outcome [View project](#)



Comparison between albendazole and pyrantel pamoate once and twice yearly in urban slum school children in Ujung Pandang [View project](#)

Low Socioeconomic Status among Adolescent Schoolgirls with Stunting

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Abstract. In the accelerating decline of maternal mortality, health and nutritional status of adolescent schoolgirls should get more concern by all stakeholders due to adolescence could break intergenerational cycle of poor nutrition in the future. Social and economic aspects are one of the important determinants that influence health and nutritional status adolescent schoolgirls. This study aimed to assess the influence of social-economic factor in the incidence of stunting in adolescent schoolgirls using a cross sectional study design. Subject of the study were 601 of 10th grade girl students in five high schools in Maros district. To determine the stunting in adolescent schoolgirl used height-for-age indices (<-2 SD HAZ-score). SPSS version 18 was used to analyze the data. The prevalence of stunting was 23.6%, found more in subjects who had siblings ≥ 2 persons (91.5%), a large family more than 4 people (73.2%), low income family (69.1%), and low education fathers (62.4%) as well as lower education mothers (68.3%). However, only the number of siblings was significantly associated with the incidence of stunting in girls based on the chi-square test ($p=0.008$). It was concluded that adolescent schoolgirls who were stunted from lower socioeconomic groups. Therefore, socioeconomic empowerment of the family should be an important point to address the problem of chronic malnutrition in adolescent schoolgirls.

Keywords: socioeconomic, adolescent, schoolgirls, stunting, nutrition disorders

1. Introduction

Attention to adolescents is important to achieve successfully a number of public health agenda, including reducing maternal mortality [1]. Lancet series (2013) showed that not only focus on the first 1,000 days of life, nutrition status on adolescent girls also needs more attention as the crucial period that support health and survival of mothers, fetal growth, growth and development of early childhood later on [2]. Therefore, adolescent girls must be at the center of a life cycle approach [3].

One of nutritional problems in adolescent girls is short stature that reflected a long-term process which affects the poor growth in children. From 2010 to 2013, the prevalence of stunting in adolescents aged 16-18 slightly increased from 31.2% to 31.4% [4] [5]. The study results by Patimah (2014) on the adolescent girls in Maros district found that the prevalence of stunting was 26.5% [6]. Stunting resulted by long term inadequate nutrient intake or linear growth disturbance due to the failure to reach genetic potential as a consequence of chronic malnutrition [7]. Stunting in adolescent girls (height <145 cm) is likely to have a risk of obstetric. Proven by the study in Bangladesh which showed 23% of pregnant adolescent girls aged 16 yo has risk obstetric [8]. In Indonesia, the age of early marriages on girls (<20 years) is still relatively high (4.8% at age 10-14 years, and 41.9% at age 15-19 years), and it increases the risk of obstetric [4].

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Adolescent health is the result of complex interaction among social determinant, risk factor, and protective of health, as well as a determinant of biological and transition of the social role of adolescent. Social determinant which contribute negatively to health status and health behaviors of adolescence is the structural determinant (poverty and inequality of gender) and proximal or intermediate (intra-familial violence, the connectedness of adolescents to family and school, the quality of the family environment, food availability) [1], [9]. From several factors that cause malnutrition, poverty, underdevelopment, low socioeconomic status, and other social determinants are major contributors of malnutrition [3]. Therefore, this study aimed to examine the association of socioeconomic determinants of the family and incidence of stunting in adolescent schoolgirls in rural areas.

2. Methods

This study was a cross-sectional design and conducted in five high schools in Maros district, South Sulawesi. This study conducted from March to April 2015 and given an approval by the Ethics Committee from Health Research Department of Medical Faculty of Hasanuddin University, Education Hospital of Hasanuddin University, and Public Hospital of Dr.Wahidin Sudirohusodo (Registration No: UH15020073). By total 610 population from 10th grade, we could only get 601 adolescent girls as samples because 9 students did not participate to this study due to illness and absences at the school during data collection. 10th grade student was chosen due to this study was the part of a longitudinal study that has been conducted in last three years.

Data on characteristic (age, number of siblings, family member) were collected by using the structured questionnaire, while socioeconomic variables including family income and parent education. Height measurement using microtoice with accuracy 0.1 cm. To assess stunting, anthropometric indices used was height for age z-score (HAZ-score) with cutoff point <-2 SD. All data were processed using the statistical package for social sciences (SPSS) for windows version 18, and were analyzed by chi-square test.

3. Results

Table 1 shows that the average age of respondent were ± 16 years (59.1%) and only 1.2% aged 18 years. Related to the menstrual age, average of students starts the menstruation at the age of 13 years (41.1%), and then only a few students never menstruation (1.3%). Almost a quarter of the subjects were stunting (23.6%) and 10.3% wasting. Allowance (pocket money) received per day of the family as much as $\pm$ IDR 13400 and less than half of it was used to buy snacks at school ($\pm$ IDR 6500).

Most of the subjects had siblings ≥ 2 (85.2%) and the number of family members > 4 (72.5%). These variables are commonly in stunted subjects (91.5% and 73.2%, respectively). Based on the socioeconomic characteristics of parents, it was found that the majority of students' parents were in low socioeconomic, proved by more 64.1% of the subjects had a low monthly income (IDR <2 million). The education level of mothers and fathers were low (68.8% and 62.4%, respectively). More than three-quarters (87.8%) mothers as housewife and most of the student's father works as farmers (37.9%). Majority of stunted students from low socioeconomic family. The number of siblings (≥ 2) was significantly associated with the incidence of stunting in adolescent girls ($p = 0.015$) (Table 2).

4. Discussion

Stunting is an expression of a long term chronic nutritional disorder. This study found a quarter of adolescent girls classified as stunting and in line to the study in Matlab Bangladesh which 28% of adolescent girls were stunting [8]. In contrary, lower result was shown by Melaku et.al (2015) [10] in Northern Ethiopia (21.2%). Study by Barman et.al. (2015) [11] and Rousham et al., (2016) demonstrated higher result (33.0% and 35.3%, respectively) [12].

Number of siblings was a factor which related to incidence of stunting in adolescent girls, where more than one sibling has a higher propensity to be stunted (91.5%). The number of siblings may be relating to distribution of parental attention, including feeding practice and food distribution in the family. Food would be given to the other siblings, moreover if it has occurred since infancy and childhood so it will increase the

risk of children getting inadequate intake. Family planning indirectly affects nutrition via its impact on feeding practices. When births are well spaced, mothers have more time, energy, and resources to adequately breastfeed and feed their young infants and children [13]. Bird (2007) concluded that the numbers of children who have many siblings tend to be malnourished, and resources in the family will be distributed directly to the younger children. The older children or adolescent potentially receive less duration of attention from their parents [14]. Another study support these findings, a study in Delhi India showed that the number of siblings is a major predictor of energy and protein intake in girls [15]. Furthermore, it was close to that reported by Mushtaq et.al (2011) which shows high number of siblings is the factor that significantly correlated with the incidence of stunting in children 5-12 years in Lahore Pakistan [16].

Table 1. Characteristic of adolescent schoolgirls

Characteristic	Mean $\pm$ SD	Min-Max	N	%
Age (yo)	15.7 $\pm$ 0.6	14 – 18		
• 14			8	1.3
• 15			178	29.6
• 16			355	59.1
• 17			53	8.8
• 18			7	1.2
Menstruation's Age (yo)	13.1 $\pm$ 0.9	10 – 15		
• No Menstruation			8	1.3
• 10			1	0.2
• 11			13	2.2
• 12			122	20.3
• 13			247	41.1
• 14			191	31.8
• 15			19	3.2
HAZ-Score	-1.51 $\pm$ 0.7	-4.20 – 0.84		
• Stunted			142	23.6
• Normal			459	76.4
BAZ-Score	-0.65 $\pm$ 1.1	-3.61 – 2.89		
• Wasting			62	10.3
• Normal			498	82.9
• Overweight/Obes			41	6.8
Pocket Money (IDR. per day)	13401 $\pm$ 7.276,6	2.000 – 50.000		
Money buy snack (IDR.per day)	6518.9 $\pm$ 3660.2	1.000 – 34.000		

Table 2. Relationship of Socioeconomic factors With Stunting on adolescent schoolgirls

Characteristics	Stunted	Normal	Total	p Value
Number of siblings (prs) [#]	3.38 $\pm$ 1.7	3.13 $\pm$ 1.8	3.19 $\pm$ 1.8	0.015
• 1	12 (8.5)	77 (16.8)	89 (14.8)	
• ≥ 2	130 (91.5)	382 (83.2)	512 (85.2)	
Family size (prs) [#]	5.70 $\pm$ 1.8	5.54 $\pm$ 1.8	5.58 $\pm$ 1.8	0.914
• ≤ 4	38 (26.8)	127 (27.7)	165 (27.5)	
• > 4	104 (73.2)	332 (72.3)	436 (72.5)	
Parent's income (IDR/Mo) [#]				0.295
• ≥ 2 million	25 (30.9)	102 (37.4)	127 (35.9)	
• < 2 million	56 (69.1)	171 (62.6)	227 (64.1)	
Mother's education [#]				0.917
• High (more than junior high school graduate)	45 (31.7)	141 (31.0)	186 (31.2)	
• Low (below junior high school graduate)	97 (68.3)	314 (69.0)	411 (68.8)	

Father's education					
•	High (more than junior high school graduate)	53 (37.6)	189 (42.2)	242 (41.1)	0.377
•	Low (below junior high school graduate)	88 (62.4)	259 (57.8)	347 (58.9)	
Mother's occupation [#]					
•	Farmer	2 (1.4)	1 (0.2)	3 (0.5)	0.151
•	Entrepreneur	6 (4.2)	27 (5.9)	33 (5.5)	
•	Labor	0 (0.0)	2 (0.4)	2 (0.3)	
•	Civil servant	6 (4.2)	20 (4.4)	26 (4.3)	
•	Private servant	1 (0.7)	1 (0.2)	2 (0.3)	
•	Housewife	125 (88.0)	403 (87.8)	528 (87.8)	
•	Others	2 (1.4)	5 (1.1)	7 (1.2)	
Father's occupation [#]					
•	Labor	7 (4.9)	21 (4.6)	28 (4.7)	0.126
•	Civil servant	11 (7.7)	60 (13.1)	71 (11.8)	
•	Private servant	13 (9.2)	29 (6.3)	42 (7.0)	
•	Entrepreneur	41(28.9)	131 (28.5)	172 (28.6)	
•	Farmers	57 (40.1)	171 (37.2)	228 (37.9)	
•	Others	13 (9.1)	47 (10.2)	60 (10.0)	

= n (%)

This study show that family size, family income, education and occupation of the parents did not relate significantly ($p > 0.05$) with the incidence of stunting. However, the proportion of stunting 3 times more in large family size (>4 persons), doubled in low income family (IDR <2 million per month) as well as low education of parents. In addition, the problem of stunting occurred in those who have mother does not working and the occupation of the father were farmers. The results of Indonesia basic health research (2010) supports this study in which the prevalence stunting in adolescents aged 16-18 years were in households with the lowest economic circumstances (40.7%). Education level of father is inversely related to prevalence of stunting and shows the lower education the higher prevalence of stunting. The highest prevalence of stunting in head of household were in those who works as a farmer / fisherman/labor (38.2%) [4]. Furthermore, studies in Cairo in line with this research that 90.7% of teenage mothers who stunting is not working (housewife) [17]. Results of other studies support these findings, as reported by Deshmukh et.al (2013) that children who have parents well educated and low-income and working as a laborer have a higher chance to get stunting. Education and work mothers do not contribute significantly to stunting [18]. These results are also in line with the findings of Melaku et.al (2015) that the majority of the work is a farmer father and have a large family (>4 persons), but both these variables are not associated with the incidence of stunting in adolescents girls, ($p = 0.234$ and $p = 0.071$, respectively), father's education ($p = 0.090$) and mother ($p = 0.928$) was not associated with the incidence of stunting in adolescents [10].

5. Conclusion

The incidence of stunting in adolescent schoolgirls tend to be on the low socioeconomic family and number of siblings was significantly associated with stunting incidence. Our findings, in conjunction with other evidence, suggest that it may be family empowerment and family planning program play a pivotal role in prevention of stunting. Nevertheless, further works needs to investigate deeply the correlation of stunting with any other factors such as environmental and feeding practices that may increase the incidence of stunting. In the future, the impact to the obstetric and gynecology problem during pregnancy for those are stunting should be considered by all stakeholders.

6. Acknowledgements

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7. References

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