



SCHOOL HEALTH DEVELOPMENT INDEX (SHDI) AS AN INSTRUMENT FOR SCHOOL HEALTH DEVELOPMENT

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Abstract

This study is a continuation study (second year); in the first year the dimensions and indicators of SHDI had been identified, and now we continue to develop SHDI instrument to find the school health development index. We used an instrumental development method, consisting of; 1) reviewing the concept, dimensions, and indicators of SHDI from the first year's results, 2) developing blueprint of the instrument, 3) developing instrument's draft, 4) instrument validation by experts, 5) revising instrument validation results, 6) practitioner testing (UKS teachers), 7) panel testing of instrument, 8) small group trial, 9) final instrument. The results showed that; 1) based on expert review, 90% of the items in the instrument is relevant, 2) from expert test, the instrument of SHDI was approved to be continued, 3) from the panel test there was a change in weightage and addition of health indicators, 4) the trial results showed that the instrument had a sufficient feasibility, and thus could be used to measure SHDI. In the following year we would measure use the instrument in schools to obtain a picture of health school development in Buleleng District.

Introduction

The success of education is determined by several factor; one of factor that contribute to successful learning and teaching at school is health and environment of the school (Knopf, 2016). There are two processes in school, learning and educating the students. Learning is a process of interaction between students and teachers and with the source of learning, aiming to improve students' intelligence; whereas education is a process to develop students' capability and positive character. School is a formal and strategic institution to prepare human resources who are physically, mentally, and socially healthy to be productive human (McKenzie, 2016; Handayani, 2017).

One of the target of Medium-term National Developmental Plan (RPJMN) 2010-2014 and Millennium Developmental Goals (MDGs) in Strategic Plan of Kementerian Kesehatan Indonesia 2010-2014 is strengthening coordination and synergism between central and local government to accelerate health development and realizing a healthy populations who are independent and just. Therefore, health information system between central and local government must be synergized to create valid and qualified indicators of health development (Kementerian Kesehatan, 2010).

School organizations are in the frontline in improving the welfare and health of individuals and community, and is a reflection

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of a complete society, because they consist of components such as teachers, headmaster, students, employees and others who are also a part of a larger society. Health should be accessible as global health so that it can provide comprehensive healthcare for all (Ooms, 2014). Recently, Ministry of Education and Culture launched an urgently needed synergism between health and education system to reach the comprehensive education goal, which is creating smart and healthy people (physically and mentally) as dictated by the 1945 Constitution of the Republic of Indonesia. A successful community healthcare could be developed through collaboration between environment and health via social scientist, economic scientist, and the government (Reis, 2014). Today, students are the future generation and national asset, hence health education must be given since school age. School has important role in delivering health information to the students and society, because healthy lifestyle is a necessary habit and must be started from the parents, children, and teachers in school.

Moreover, development of high quality school has been dwindling because standards in constructing new schools have often been ignored, such as minimal school area, narrow building layout, or even building school in dense and dirty housings. Nowadays, there are even rumors that schools choose to enroll as many students as possible to gain fundings or recognition from other school while ignoring its quality. Therefore, an improvement in schools' quality is needed, especially in school resources so that schools could support development of integrated school health system. In accordance to Solehati (2015), knowledge and skill of teachers, and students' personal hygiene must be improved to enhance Clean and Healthy Lifestyle (PHBS) in society.

The role of School Medical Unit (UKS) was still not optimal in some schools. From observation of some schools in Buleleng, there was no sufficient medical equipment or medicines in their UKS and some UKS were just an empty room. After interviewing several UKS supervisors, they did not have health records such as students' health status, school's health status and several basic data. School UKS was only involved in Regency/Province/National

competition, and after the competition the role of UKS diminished. This clearly worsened school's health condition, and the role of school health system in supporting students academic learning became even more unclear.

In the first year, we created dimensions and indicators for SHDI, such as 1) Healthy school is a must in every schools in Buleleng Regency from elementary school, junior high school, senior high school, and vocational high school, 2) Knowledge about SHDI among UKS supervisors in elementary school, junior, senior, and vocational high school were low, 3) SHDI is needed to be known in all schools to measure degree of health in each school in Buleleng Regency, 4) SHDI dimensions were a) School regulation, b) School program plan, c) Resouces with its indicators such as vision, mission, and school building of (air ventilation hygiene, lighting, no slippery floor, standard space, hygiene resources, toilet, and so on), d) School community habit, 5) The presence of SHDI guidebook as a reference to fulfill SHDI.

Based on the backgorund and the first-year result, development of School Health Depeloment Index (SHDI) instrument to develop school health is urgently needed as part of the grand strategy through evidence-based approach.

Method

Research population was all schools in every educational level. Samples were selected randomly and in proportional for each level of education. Samples were limited to schools in each level of education for a total of 10 schools consisting of 4 elementary schools, 2 junior high schools, 2 senior high schools, and 2 vocational high schools. The steps of research were: 1) collecting information about analysis on the need of developing SHDI, 2) planning the instrument to be developed, including defining, formulating the goals, deciding on the rundown, and made the study instrument, 3) developing SHDI instrument, 4) validating SHDI instrument to all the experts, 5) revising SHDI instrument according to suggestion from all experts, 6) practical test, 7) panel test, 8) limited trial test for SHDI instrument, and 9) final SHDI instrument.

Result and Discussion

SHDI dimension and indicator was

obtained from the result of pilot study, the dimension and indicators were then formulated into the blueprint of SHDI instrument shown below in Table 1

Table 1. Blueprint of School Regulation Component in SHDI Instrument

SUB-COMPONENT	SUCCESSFUL CRITERIA/ INDICATOR	DATA SOURCE	NUMBERS	RANGE OF NUMBERS
School Vision	Support school health and hygiene	Headmaster	3	1-3
School Missions	Support hygienic habits and health efforts in school	Headmaster	3	4-6
School Goals	Representing healthy and hygienic habit	Headmaster	4	7-10
Total			10	

(Source: Dharmadi, 2016)

Table 2 Blueprint of School Program Plan Component in SHDI Instrument

SUB-COMPONENT	SUCCESSFUL CRITERIA/ INDICATOR	DATA SOURCE	NUMBERS	RANGE OF NUMBERS
Environmental Hygiene Program	Presence of environmental hygiene program	Headmaster	5	11-15
UKS Program	Presence of sustainable UKS activity	UKS supervisor	5	16-20
Health Competition Program	Presence of sustainable school health competition	UKS supervisor	5	21-25
Total			15	

(Source: Dharmadi, 2016)

Table 3 Blueprint of Resources Component in SHDI Instrument

SUB-COMPONENT	SUCCESSFUL CRITERIA/ INDICATOR	DATA SOURCE	NUMBERS	RANGE OF NUMBERS
School Area Hygiene	School area hygiene is realized	UKS supervisor	5	26-30
Ventilation	Presence of functional and adequate ventilation	UKS supervisor	5	31-35
Lighting	Presence of good lighting	UKS teacher	3	36-38
No slippery floor	Satisfactory floor hygiene	UKS teacher	3	39-41
Standard space	Standardized open area and resources	UKS teacher	5	42-46
Hygiene Resources	Presence of good hygiene resources	UKS supervisor	4	47-50
Total			25	

(Source: Dharmadi, 2016)

Table 4 Blueprint of School community's Hygienic Habit in SHDI Instrument

SUB-COMPONENT	SUCCESSFUL CRITERIA/ INDICATOR	DATA SOURCE	NUMBERS	RANGE OF NUMBERS
Appropriate littering awareness of school community	Presence of appropriate littering awareness (teachers, students, employees)	UKS supervisor	3	51-53

Awareness to dress neatly and cleanly in school	Presence of awareness to dress neatly and cleanly	UKS supervisor	3	54-56
Environmental cleanliness awareness	Presence of environmental cleanliness aware among students	UKS supervisor	4	57-60
Total			10	

Source: Dharmadi, 2016

The blueprint of SHDI instrument consisted of 1) School regulation (consisted of sub-components: vision, missions, and goals of school), 2) School program plan (consist of sub-components: health hygiene program, UKS program, health competition program), 3) Resources (consist of sub-components: school area hygiene, ventilation, lighting, no slippery floor, standard space, hygiene resources), 4) School community clean habit (consist of sub-components: appropriate littering awareness, awareness to dress neatly and cleanly, environmental cleanliness awareness)

SHDI instrument drafts based on the blueprint consisted of 1) Identity, 2) Number column, 3) Component column, 4) Scoring point column, 5) Score column as seen on Instrument 01.

INSTRUMENT 01
SCHOOL HEALTH DEVELOPMENT INDEX (SHDI)

SCHOOL NAME :.....
ADDRESS :.....
REGENCY :.....

NUMBER	COMPONENT	SCORING POINT	SCORE		
			1 (Not Good)	2 (Enough)	3 (Good)
A	School vision is relevant to school health development	School Vision			
B	School missions is relevant to school health development	School Missions			
C	School goals is relevant to school health development	School Goals			
A	Presence of daily/ weekly/monthly/ annual environment cleaning program	Written daily cleaning program Written weekly cleaning program Written monthly cleaning program Written annual cleaning program			

B	School Medical Unit program	Written macro UKS program Written detailed UKS program
C	Health and Hygiene Competition program	Written school health and hygiene competition program Competition's written instrument Written report of health and hygiene competition
A	School area hygiene	Headmaster room Teacher room Classroom Library Canteen UKS Toilet Prayer room Warehouse
B	Ventilation	Headmaster room Teacher room Classroom Library Canteen UKS Toilet Prayer room Warehouse
C	Lighting	Headmaster room Teacher room Classroom Library Canteen UKS Toilet Prayer room Warehouse

D	No slippery floor	Headmaster room Teacher room Classroom Library Canteen UKS Toilet Prayer room Warehouse
E	Space standard	Headmaster room Teacher room Classroom Library Canteen UKS Toilet Prayer room Warehouse
F	Hygiene resources	Headmaster room Teacher room Classroom Library Canteen UKS Toilet Prayer room Warehouse
G	UKS room	Presence of UKS room Patient bed Presence of weight scale, height scale, thermometer, etc. Presence of medicine cabinet, emergency box, and simple medicine (wound medicine, oral rehydration therapy, paracetamol) Presence of washtub

H	Water Source and Sanitation	<p>Presence of clean water</p> <p>Presence of goose-neck closet</p> <p>Presence of septic tank</p> <p>Presence of closed and smoothly flowing water drainage</p> <p>Presence of water suction/ bio pore</p>
I	Toilet	<p>Separate men and women student toilet</p> <p>Toilet ratio for male students is 1:40</p> <p>Toilet ratio for female students is 1:25</p> <p>Presence of teacher toilet</p> <p>Clean and not foul smelling</p> <p>Presence of clean and flowing water</p> <p>Presence of soap and carbolic cleaner</p> <p>Presence of scoop, hanger, toilet brush</p> <p>There is no mosquito larvae</p>
J	Cafeteria	<p>Cafeteria was located far from trash bins and toilets</p> <p>Cafeteria equipments are clean, not rusty, and kept in closed storages.</p> <p>Unpackaged foods are stored and served in closed containers and are not stale</p> <p>Packaged foods are not expired and certified by BPOM.</p> <p>Foods and beverages do not contain any formalin, borax, and harmful chemical dyes</p> <p>Styrofoam are not used to pack food and beverages</p> <p>Cafeteria employees use apron and clean clothes</p> <p>Food handlers always cleanse their hand before serving food for consumers</p>

K	School yard	Clean and neat Open space Shady trees No water puddle Rainwater absorbent Guard rail Diversity
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IV SCHOOL COMMUNITY'S HEALTHY LIFESTYLE

A	Healthy school promotion	There is healthy school promotion There are slogans/ posters/ leaflets of healthy lifestyle There is a healthy life campaign (eg the dangers of smoking, drugs, and liquor)
B	Awareness of school members (principals, teachers, staff, students)	Maintain personal hygiene Discard garbage in trash bins Periodical community work Washing hands before and after meals Being a role model in healthy lifestyle
C	School committee	Actively participating in a healthy school Facilitate a healthy school program
TOTAL		113

The instrument draft was further checked by four experts. Two of the experts were evaluation expert on making valid and reliable instrument while the two others were doctors. They provided advice to improve the instrument, specifically the details and value of each component. Moreover, the instrument must be quantified accurately because it is expected to represent the real condition of the school. The next phase is practical test, where one teacher from every level of education (elementary school, junior high school, senior high school, and vocational school) were selected into instrument practical test. Hereinafter, twenty colleagues/lectors from the faculty of medicine and sport, with a master qualification and an education background from sport science, sport education and

medicine were selected into instrument panel test. It could be concluded from the results that an improvement is needed in grammar, addition of description column, and distiguishing the component from the subcomponent. The next phase is limited instrument test in ten schools from elementary to senior/vocational schools. The result of limited instrument test were realized as SHDI shown in instrument 02.

SHDI instrument formulation was a concrete effort to provide ahealth stadard in every school. These efforts can be built through a collaboration between environment and health by social experts, economist, and government (Reis, 2014). The instrument was also one of the effort to educate school in planning, implementing, and evaluating the school health policy. Moreover, Ko Shin (2014), stated that

school-health education is one of a mortality reduction effort.

Each component in the SHDI is vital to create a healthy school standard. Dharmadi (2016), stated that SHDI components consist of 1) school policy, 2) work program, 3) facilities and infrastructure and 4) school communities behaviour. The components will reveal how planning, implementation, evaluation, and follow-up has been done by the school to realize a healthy school. This will be the main benchmark for the future school development. Specifically, the instrument could represent the real school condition in Buleleng District for all education levels (elementary to senior high/vocational school) that has been unobserved by education office and other relevant agencies.

For example, this instrument could reveal food and beverages condition in school, whether they have conformed to health standard or not, because there has been an increase in the number of malnutrition cases (both malnourished and obesity). In addition, Waltona, M, and Signal, L. (2013), stated that the role of school policy is very important to minimize incidence of malnutrition and obesity among students.

Furthermore, SHDI instrument could reveal how school community implemented healthy lifestyle, including teacher, students,

staffs, parents, and even the health department, to realize a healthy school. In order solve the school health problems, a collaboration between the stakeholders is important. (Larrier, Y and Kijai, J. 2012:10). This collaboration is a monitoring and control effort on dangerous events at school in accordance to the future *World Health Organization* (WHO) program on controlling of HIV dissemination, malaria, TB, drugs, and smoking (Sridhar, D, and Gostin, L, 2014). SHDI instrument could describe the health facilities and infrastructure condition in each school. Furthermore, it can be a reference for education department in distributing health facilities and infrastructure aid. In conclusion, health school programs should be a concern and become the main program in realizing a healthy school.

Conclusion

The study showed that; 1) 90% of the instrument's elements are relevant based on expert test 2) SHDI instrument is good and approved to be continued based on expert test, 3) from the panel test results there should be a change in the value of instruments and additional health indicators, 4) the test revealed that this instrument has a good feasibility to measure SHDI. In the following year, the SHDI measurement will be performed in all schools in Buleleng to obtain a picture of health

**INSTRUMENT 02
SCHOOL HEALTH DEVELOPMENT INDEX (SHDI)**

NAME OF SCHOOL :.....
 ADDRESS :.....
 DISTRICT :.....

NO	COMPONENT	ASSESSMENT	GRADE			VALUE	ANNO-TATION
			1 (deficient: 0-40%)	2 (sufficient: 50-70%)	3 (Good:80- 100%)		
I SCHOOL POLICY							
A	School vision is relevant to the development of healthy school.	School vision					

B	School mission is relevant to the development of healthy school.	School mission					
C	School objectives are relevant to the development of healthy school.	School objective					
II SCHOOL WORK PROGRAM							
A	The school has environmental hygiene program everyday/ week/ month/ year	Written-daily hygiene program					
		Written-weekly hygiene program					
		Written-monthly hygiene program					
		Written-yearly hygiene program					
B	School Health Program (UKS)	Written-macro school health program					
		Written in detail-school health program					
C	Hygiene and health competition program	Written-hygiene competition program					
		Written-competition instrument					
		Written report of hygiene and health competition program					

III FACILITIES AND INFRASTRUCTURE							
A	School area hygiene	Principal's office					
		Teacher's room					
		Classroom					
		Library					
		Canteen					
		UKS					
		Toilet					
		Prayer room					
		Warehouse					
B	Ventilation	Principal's office					
		Teacher's room					
		Classroom					
		Library					
		Canteen					
		UKS					
		Toilet					
		Prayer room					
		Warehouse					
C	Lighting	Principal's office					
		Teacher's room					
		Classroom					
		Library					
		Canteen					
		UKS					
		Toilet					
		Prayer room					
		Warehouse					
D	No Slippery floor	Principal's office					
		Teacher's room					
		Classroom					
		Library					
		Canteen					
		UKS					
		Toilet					
		Prayer room					
		Warehouse					

E	Space standard	Principal's office					
		Teacher's room					
		Classroom					
		Library					
		Canteen					
		UKS					
		Toilet					
		Prayer room					
		Warehouse					
F	Hygiene resources	Principal's office					
		Teacher's room					
		Classroom					
		Library					
		Canteen					
		UKS					
		Toilet					
		Prayer room					
		Warehouse					
G	UKS room	Presence of UKS room					
		Patient bed					
		Presence of weight scale, height scale, thermometer, etc.					
		Presence of medicine cabinet, emergency box, and simple medicine (wound medicine, oral rehydration therapy, paracetamol)					
		Presence of washtub					

H	Water Source and Sanitation	Presence of clean water					
		Presence of goose-neck closet					
		Presence of septic tank					
		Presence of closed and smoothly flowing water drainage					
		Presence of water suction/bio pore					
I	Lavatory	Separate men and women student toilet					
		Toilet ratio for male students is 1:40					
		Toilet ratio for female students is 1:25					
		Presence of teacher toilet					
		Clean and not foul smelling					
		Presence of clean and flowing water					
		Presence of soap and carbolic cleaner					
		Presence of scoop, hanger, toilet brush					
		There is no mosquito larvae					

J	Cafeteria	Cafeteria was located far from trash bins and toilets					
		Cafeteria equipments are clean, not rusty, and kept in closed storages.					
		Unpackaged foods are stored and served in closed containers and are not stale					
		Packaged foods are not expired and certified by BPOM.					
		Foods and beverages do not contain any formalin, borax, and harmful chemical dyes					
		Styrofoam are not used to pack food and beverages					
		Cafeteria employees use apron and clean clothes					
		Food handlers always cleanse their hand before serving food for consumers					

K	School yard	Clean and neat					
		Open space					
		Shady trees					
		No water puddle					
		Rainwater absorbent					
		Guard rail					
		Diversity					
IV HEALTHY BEHAVIOR OF SCHOOL COMMUNITY							
A	Healthy school promotion	There is healthy school promotion					
		There are slogans/ posters/ leaflets of healthy lifestyle					
		There is a healthy life campaign (eg the dangers of smoking, drugs, and liquor)					
B	Awareness of school members (principals, teachers, staff, students)	Maintain personal hygiene					
		Discard garbage in trash bins					
		Periodical community work					
		Washing hands before and after meals					
		Being a role model in healthy lifestyle					

C	School committee	Actively participating in a healthy school					
		Facilitate a healthy school program					
	TOTAL	113					

development.

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References

Dharmadi, M.A. 2016 The Analysis of School Health Development Index (SHDI). *Jurnal KEMAS*, 12 (1) : 11-17.

Handayani, OWK., et al. 2017. Substitution Program in Indonesia and Australia as Health Promotion Model At Schools (An Effort to Decrease Obesity). *Jurnal KEMAS*, 12(2): 183-188.

Kementerian Kesehatan. 2010. Rencana Strategis Kementerian Kesehatan Republik Indonesia 2010-2014: Jakarta

Ko, Y.J., Shin, S.H., et al. 2014. Effect of Employment and Education on Preterm an Full Term Infant Mortality in Korea. *Public Health Journal*, 128 (3)

Knopf, JA., et al. 2016. School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review. *American Journal of Preventive Medicine*, 51(1): 114-126.

Larrier, Y and Kijai, J. 2012. School Counselor Perspectives of The Barriers And Facilitators Associated with Their Involvement in the Childhood Obesity Evidemic. *Health Education Journal*, 43 (4) : 218-225

McKenzie, TL., et al. 2016. The SPARK Programs: A Public Health Model of Physical Education Research and Dissemination. *Human Kinetics Journal*, 35(4): 381-289.

Ooms, G, Marten, R, Hammonds, R et al. 2014. Great Expectations for WHO: a Framework Convention On Global Health to Achieve Universal Health Coverage. *Public Helath Journal*, 128 (2)

Reis, S, Morris, G et all. 2014. Integrating Health and Enviromental Impact Analysis, *Public Health Journal*, 118 (4)

Solehati, Tetti, dkk. 2015. Pengaruh Edukasi Terhadap Pengetahuan dan Skill Guru Serta Personal Hygienes Siswa SD. *Jurnal KEMAS*, (1) : 135-143

Sridhar, D and Gostin, L. 2014. World Health Organization (WHO): Past, Present and Future. *Public Health Journal*, 128 (2)

Waltona, W and Signal, L. 2013. Public Policy to Promote Healthy Nutrition in Schools: Views of Policymakers. *Health Education Journal*, 72 (3) : 283-291