Screening for the hyperkinetic disorder by using strength and difficulties questionnaire teacher-report (SDQ-TR) in Indonesia school-aged children

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Abstract

The aim of the research was to examine the validity of strength and difficulties questionnaire teacher-report (SDQ-TR) to screen hyperkinetic disorder in Indonesia school-aged children. The SDQ-TR was administrated to the teacher of representative samples of 222 elementary school children (7–14 years old). The SDQ-TR hyperactivity-inattention subscale scores were compared with the clinical diagnostic classification from clinical psychologists. The validity of the screening result was analysed using receiver operating characteristic (ROC), likelihood ratio (LR) and Chi-Square. Based on the analysis of ROC and LR by using cutoff point ≥ 7, obtained prevalence of hyperkinetic disorder was equal to 34.23% with sensitivity 72.4% and specificity 73.3%. Positive and Negative LR were 2.71 and 0.38. The Chi-Square analysis showed that there was a positive correlation between clinical psychologists' diagnosis and the SDQ-TR screening result. The study showed that SDQ-TR was a valid instrument for screen hyperkinetic disorder in Indonesia school-aged children.

Keywords: Strengths and difficulties questionnaire (SDQ), hyperkinetic disorder, screening instrument.

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1. Introduction

Since 2007 in Sleman Regency and 2010 in Yogyakarta Municipality, each Primary Health Care has provided the psychological services by the clinical psychologists. Psychological services including the services for the various age levels, starting from the children to the elder. The number of the elder patients is commonly more than the children and the teenager patients. According to the Mental Health Information System, that is an information system as the result of the cooperation between CPMH (Center for Public Mental Health, 2013) Faculty of Psychology of Universitas Gadjah Mada and the Sleman Regency Department of Health, in 2011–2013, it is known that the number of the children as the patient visited the Primary Health Care was 1902 people. Younger patients have the various diagnosis, where the hyperkinetic cases are the greatest position (18.66%) (CPMH, 2013).

Hyperkinetic Disorder (ICD-10) (World Health Organization [WHO], 1993), or better known as Attention-Deficit Hyperactivity Disorder (ADHD; DSM-IV TR) (American Psychiatric Association, 2000) was first proposed by George Still in 1901 (Fitzgerald, Bellgrove & Gill, 2007). A hyperkinetic disorder is a disorder that includes a combination of overactive behaviour, and less modulated behaviour with a marked lack of attention and perseverance in performing a task, where this behavioural occurs in various situations and continues for a long time. The main characteristic of this disorder is lack of diligence in an activity that demands cognitive involvement and tends to move from one activity to another without accomplishing a single task, disruptive, irregular and redundant activity. Children with a hyperkinetic are often demented and impulsive, susceptible to accidents and often involved in disciplinary trouble because they do not intentionally violate rules and regulations. Usually, there are often cognitive impediments, and frequent inaction in motor development and in conversational language (WHO, 1993).

Hyperkinetic disorder or ADHD is four times more likely in boys than girls in the general population, and six to nine times more likely in boys in clinical samples (Gordon & Schroeder, 2002). The prevalence of ADHD in Indonesia is not known clearly, but based on Saputro (2004) study in Jakarta, it is known that the prevalence of ADHD in primary school children reaches 26.2%.

ADHD or hyperkinetic disorders often appear with other disorders and academic problems as well as obstacles in social relationships, so that experts become more difficult in determining the diagnosis (Holowenko, 1999; Silver, 2004). Difficulty in diagnosing hyperkinetic disorder is also experienced by psychologists in Primary Health Care Sleman District. Based on the results of a survey conducted by Siregar (2013), before making the diagnosis, the psychologist at Primary Health Care of Sleman District experienced some difficulties in the assessment process. The difficulties are: (1) some parents and teachers are less cooperative and do not want to be involved in a long-term assessment, (2) child interviews and observations cannot be done completely due to lack of available game tools, and inadequate rooms, (3) service time in Primary Health Care is very limited at an average of 4 hours per day, where there is only one clinical psychologist in each Primary Health Care. This causes patients who come to Primary Health Care should wait for long queues to get psychological services (Siregar, 2013).

Antony and Barlow (2002) state that the primary health care requires a screening instrument which is brief to make it easy in doing the assessment of psychiatry problem, though it gets much criticism. According to them, the data collected through the screening instrument can help in diagnosing more accurate in the setting of the Primary Health Care. In fact, the other medical personnel who do not have the deep knowledge of the mental health can use this screening instrument. That health personnel (such as nurses, midwives, doctors) can become the gatekeepers to attract the patients who have the psychological problems in the Primary Health Care.

The instruments most frequently used in Europe and America to measure psychological symptoms in children and adolescents are the Rutter and Achenbach questionnaires. The Rutter questionnaire is a short scoring scale to be filled by parents and teachers who have proven to be a reliable and valid

index in many contexts of child psychopathology. The Rutter questionnaire was developed over three decades ago, so it is considered somewhat obsolete which is not sufficient to cover many contemporary areas such as concentration, impulsivity, victimisation and prosocial behaviour. The Achenbach questionnaire was considered better because the questionnaire was completed by parents (Child behaviour checklist (CBCL)), Teacher Report Form (TRF) and Child (Youth self report (YSR)). The Achenbach questionnaire appears to be highly relevant when used to assess children and adolescents in clinical use, but is less useful when used for screening or research purposes because the questionnaire is quite long and contains many items that are irrelevant to the majority of children (Muris, Meesters & van den Berg, 2003).

Goodman revised the Rutter questionnaire by updating its contents and adding an item about the strength of the child, a process that eventually led to the development of strengths and difficulties questionnaire (SDQ). SDQ is a short questionnaire consisting of 25 items covering five subscales that are emotional problems, behaviour problems, hyperactivity-inattention and problems with peers and prosocial behaviour. SDQ scoring can be done by looking at the scores on each subscale or viewing the total score of difficulties that is the sum of scores on four subscales (emotional problems, behavioural problems, hyperactivity-inattention and peer problems) and strength score by looking at prosocial subscale scores. SDQ can be filled by parents (SDQ Parent Report), teachers (SDQ Teacher Report) and the child itself (SDQ Self Report) (Goodman, 1994; Goodman, Meltzer & Bailey, 1998).

SDQ has been translated into more than 60 languages, including Indonesian and free for non-commercial use. It can be downloaded from the SDQ homepage with scoring instructions, normative data from multiple countries and algorithms that combine symptoms and their effects from teachers, parents and self-reports to predict the likelihood of risk of having a common mental health disorder (http://www.sdqinfo.org/).

The study of SDQ was first performed in the UK by Goodman (1997) which showed that SDQ Parent Report (SDQ-PR) and SDQ Teacher Report (SDQ-TR) had the same function as the Rutter questionnaire. SDQ Self Report (SDQ-SR) also correlates well with SDQ-PR and SDQ-TR (Goodman et al., 1998). The prediction structure of the five SDQ factors (emotional, conduct, hyperactivity-inattention, peer problem and prosocial) can also be confirmed. Reliability is generally satisfactory, whether with internal consistency (Alpha Cronbach = 0.73), cross-informant correlation (0.34) and retest test stability after 4–6 months (0.62) (Goodman, 2001).

SDQ-PR and SDQ-TR English version substantially have a significant correlation with independent clinical diagnosis (Goodman, Renfrew & Mullick, 2000), where SDQ-TR is better than SDQ-PR and SDQ-SR in predicting hyperkinetic disorders (Goodman, Ford, Simmons, Gatward & Meltzer, 2003). SDQ-TR English version has a sensitivity of 72.4% for predictions of hyperkinetic disorders in children aged 5–10 years (Goodman, Ford, Corbin & Meltzer, 2004). SDQ-PR English version has also been shown to be significantly better than CBCL in detecting inattention and hyperactivity (Goodman & Scott, 1999).

Research on SDQ-TR, SDQ-PR and SDQ-SR has been conducted in various countries. Swedish SDQ-PR has a satisfactory internal consistency across all subscales (α = 0.67–0.87) excepting the behavioural problem subscale (α = 0.52). The optimum cut-off of the hyperactive subscale-inattention according to the receiver operating characteristic (ROC) analysis was ≥ 4 with 75% sensitivity and 75.3% specificity (Malmberg, Rydell & Smedje, 2003). Based on ROC analysis, SDQ-TR and SDQ-PR Norway subscale hyperactivity-inattention also showed optimum value cut-off ≥ 4 with 95% sensitivity and 82% specificity for SDQ-TR, 88% sensitivity value and 76% specificity for SDQ-PR (Ullebo, Posseud, Heiervang, Gillberg & Obel, 2011). The cut-off value ≥ 4 is lower than the cut-off value of SDQ-TR and English version SDQ-PR for subscale of hyperactivity-inattention.

The German SDQ study showed that all of its subscales have satisfactory reliability (values α = 0.72–0.81 for SDQ-PR, α = 0.75–0.83 for SDQ-TR). Cut-offs for five subscales of a German version of SDQ is lower than the English version, especially the hyperactivity/inattention subscale. All SDQ subscales were significantly correlated with CBCL (α Cronbach = 0.72–0.83) and with TRF (α Cronbach = 0.75–

0.83). SDQ subscale hyperactivity-inattention had a more accurate prediction for ADHD (AUC = 0.766 for SDQ-PR and AUC = 0.792 for SDQ-TR) than CBCL (AUC = 0.703) and TRF (AUC = 0.722). Both using the total score or subscale of specific problems, SDQ-PR, SDQ-TR and SDQ-SR is effective in predicting each clinical category as in CBCL, TRF and YSR (Becker, Becker & Rothenberger, 2004; Becker, Woerner, Hasselhorn, Banaschewski & Rothenberger, 2004).

Research of SDQ-PR and SDQ-SR Netherlands version showed that the structure of the five factors of SDQ can be confirmed. Internal consistency for SDQ subscales is generally satisfactory, the average Alpha is 0.7 for SDQ-PR and 0.64 for SDQ-SR. The retest test stability with the interclass correlation coefficient is in the range of 0.7 or higher. Substance correlations were found between total SDQ difficulty score and total CBCL score (r = 0.7) (Muris et al., 2003). Internal consistency of SDQ-TR is better judged that the mean α for all subscales is 0.8 (van Widenfelt, Goedhart, Treffers & Goodman, 2003). The correlation pattern hypothesis between SDQ-PR and SDQ-TR with CBCL/TRF is acceptable (Mieloo et al., 2012).

Research in Australia showed that the internal reliability of SDQ-PR for all its subscales is moderate to high (α = 0.59–0.8) (Hawes & Daads, 2004). Japan's SDQ-PR has good reliability for all its subscales (α = 0.52–0.77) and the cut-off of the SDQ-PR hyperactivity subscale is the same as the English SDQ-PR (Matsuishi et al., 2008). The French SDQ-PR has good internal consistency (α = 0.54–0.74) and the same cut-off as the English and American SDQ-PR on almost all subscales, except the prosocial subscale where the cut-off is lower than English and American (Shojaei, Wazana, Pitrou & Kovess, 2009). The Chinese SDQ has an internal consistency with α = 0.45–0.81 for SDQ-PR and α = 0.55–0.84 for SDQ-TR. The cut-off value of the subscale of difficulty is 17 for SDQ-PR and 15 for SDQ-TR (Lai et al., 2010). Spanish SDQ has an internal consistency value α = 0.64–0.83 for SDQ-TR and α = 0.58–0.77 for SDQ-PR (Rodriguez-Hernandez et al., 2012). The Danish SDQ-PR has a good internal consistency value ($\alpha \geq 0.7$) for the total difficulty and subscale of hyperactivity (Niclasen et al., 2012).

Besides having a good psychometric property and having a significant correlation with independent clinical diagnosis, SDQ-PR may well detect comorbidity of ODD in children with hyperkinetic or ADHD disorders (Aebi et al., 2010), in which the presence of other accompanying disorders may predict its severity (Miranda, Soriano, Fernandez & Melia, 2008) and reflect on the behavioural, emotional and social characteristics of children with the disorder (Iizuka et al., 2010).

The research that has been conducted in many countries shows a consistent result that the SDQ has a good psychometric property and sensitive to screen the hyperkinetic disorder, the ADHD, and its comorbidity, although there is a difference of the cut-off score in each country. It may be caused by the culture effects (Becker et al., 2006), or the difference of instrument used in diagnosing the psychopathology (Shojaei et al., 2009).

The SDQ-TR, the SDQ-PR and the SDQ-SR have been adapted into the Indonesian language by Tjhin Wiguna and Yohana Hestyanti and have been used both for research and clinical purpose. As far as the researcher knows, it is unknown clearly about the property psychometric as the screening instrument of the hyperkinetic disorder. The SDQ Indonesia version scoring guide is available at www.sdq.info.org. It also still uses the English norm. Whereas, the literature review shows that the cut-off score for every country is different because of the possibility of the culture effect.

In relation to this and to respond to the needs of the primary health care in Yogyakarta about the screening instrument, this research commonly aims to adapt, to test the screening quality and to find the cut-off score of the SDQ-TR Indonesia version in screening the hyperkinetic disorder of the children.

The testing of the screening quality requires a gold standard diagnosis (Dahlan, 2001). The researcher used the diagnosis result of the clinical psychologist in the primary health care that used the guideline of ICD-10 as the gold standard for the hyperkinetic disorder diagnosis in this research.

The results of this research are expected to be able to provide theoretical benefits in enriching the literature of the psychology science, especially in the development of the instrument for screening the behaviour and emotional problem of the children and the teenagers. Practically, the results of this study are expected to be widely used in the early detection of hyperkinetic disorders in children and adolescents in schools, primary health centres, hospitals and other health clinics. SDQ-TR is also expected to provide benefits in the practice of psychology that can help clinical psychologists in facilitating the assessment of hyperkinetic disorders in children and in evaluating the effects of treatment that has been given.

The question to be answered from this research is whether SDQ-TR subscale hyperactivity-inattention is a valid instrument to be used in doing screening for hyperkinetic disorder in children?

2. Method

Criteria of the subject in this research were the selected male and female students of the elementary school-aged of 7–14 who are able to take the education at that school for at least 1 year, with the number of the research subjects 284 people. The research subjects were obtained by using the three stages cluster random sampling technique (Kerlinger, 1990).

The first stage, the researchers took randomly nine sub-districts in Sleman District and six district in Yogyakarta City by using the lottery. The second stage, the researchers took randomly one Elementary School in each selected sub-district by using the lottery. The third stage, the researchers took each of the four students from grade 1 to grade 6 randomly by using a lottery on each selected elementary school.

2.1. The procedure

Generally, the research procedure was divided into five phases namely (1) the research preparation, (2) the development and trial run of research instrument, (3) the training of the diagnosis determination based on the ICD-10, (4) the data gathering and (5) the data analysis.

2.1.1. Research preparation

In this phase, the researcher prepared the necessary facilities and infrastructure that is the research license from the Regional Development Planning Agency of the Sleman Regency and the Licensing Office of the Yogyakarta Municipality. After the researcher got the license, hence the researcher requested the agreement of the selected school and Primary Health Care to conduct the research, then socialised and informed consent to the homeroom teachers, parents and psychologists in Primary Health Care.

2.1.2. The development and trial of the research instrument

In this phase, the researcher conducted three procedures, namely (a) the adaptation process of SDQ, (b) the developing of diagnosis training module, (c) the making of video to test the diagnosis quality from the psychologist of Primary Health Care.

2.1.2.1. The adaptation process of the SDQ

The adaptation process of the SDQ was conducted by using the back translation method (Hambleton, Merenda & Spielberger, 2005). In the beginning, the SDQ (English version) has been translated from English into Bahasa Indonesia by two language experts who have the English education background. The translation result of the SDQ was evaluated by three psychology experts who have high competence in the field of children psychology, and across culture. This aims at fulfilling the norm of the translation appropriateness in line with the psychology construction, theoretically and practically. The evaluation given by those psychology experts was used as the basis to revise the SDQ translation.

The researcher then tested the SDQ trial to 20 elementary school teachers in Sleman Regency. The tested process was conducted to determine the level of understanding of respondent towards the content of the questionnaire and the easiness level of the questionnaire appearance to be used by respondent. The evaluation and the inputs obtained are used as the basis for the completeness of the SDQ translation result. Two people of English experts different from the previous then translated the SDQ back into English. The result was then compared and evaluated again by the psychology experts. This evaluation result was used as the instrument in gathering the data.

2.1.2.2. The development of the diagnosis training module

The diagnosis-training module was arranged according to the ICD-10 by developing the structured steps in the diagnosis determination. The senior child clinical psychologist has reviewed the module.

2.1.2.3. The making of the film record video

The film that was made is the recording result of the child behaviour that has been diagnosed a hyperkinetic disorder. The behaviour that was recorded is the behaviour that showed the symptoms mentioned in ICD-10. The researcher employed this film for the testing of the diagnosis quality of each psychologist. A senior child clinical psychologist was asked to make a diagnosis based on information obtained from the video. The diagnostic result was compared with the diagnosis of senior child clinical psychologists, using inter-rater reliability method.

2.1.3. The implementation of the diagnosis determination training based on the ICD-10

A senior child clinical psychologist, who has been experiencing to diagnose a psychological disorder of the children for at least 5 years, gave the diagnosis determination training based on the ICD-10. The given training material was in line with the prepared module.

After the training session ended, the researcher played the video that has been prepared and asked the participants to conduct diagnosis determination based on the behaviour that was observed from that video. This aimed at knowing the diagnosis quality of each training participants.

The diagnosis quality seems from the inter-rater reliability analysis by comparing the rating result of the training participants with the rating result of the senior psychology towards the children behaviour in that video. All of the psychologists as the participants have the value of Kappa that was average up to satisfying (Kappa = 0.71–1).

2.1.4. The data collection

The data collection has been conducted in six elementary schools in Yogyakarta Municipality and 10 elementary schools in Sleman Regency. There were two types of data gained from this research namely (1) the SDQ-TR data and (2) the assessment result data that have been conducted by the psychologist.

2.1.4.1. The SDQ-TR data collection

The SDQ-TR data collection was conducted after the license was gained from the parents and the homeroom teachers as the research subjects. The SDQ-TR that has been completed by the homeroom teachers were 284.

2.1.4.2. The children assessment in schools

The assessment that was conducted by the psychologist towards each research subject including the observation of the children behaviour during the lesson period in the classroom, interview the children, interview the teachers and parents on the daily children behaviour. After the assessment has been conducted, the psychologist conducted the diagnosis determination by using the guideline of the ICD-10. This process was conducted blindingly, in which the psychologist of the Primary Health Care did not know the result of the SDQ-TR that has been completed by the homeroom teachers.

The subjects in this research that have been assessed completely by the psychologist were 222. There were 62 research subjects who were not assessed because of some technique obstacles.

2.1.5. The data analysis

After the whole data were collected, the researcher categorised the data into two namely the SDQ-TR and the diagnosis data. The researcher then gave the score at 284 data SDQ-TR that was conducted by counting the score of a hyperactive-inattention score. The given scoring was in line with guideline from the original version of SDQ. The diagnosis data that had been collected were given the score by giving the score of 1 at the hyperkinetic disorder diagnosis, and the score of 0 at the diagnosis non-hyperkinetic.

The quality testing/screening accuracy of five items at the hyperkinetic-inattention subscales towards the hyperkinetic disorder was conducted through the ROC analysis method, to determine the discrimination value (Area under curve (AUC)), the value of the optimum boundary (cut off) to detect the hyperkinetic disorder, and the value of the sensitivity and the specificity based on the gained optimum cut off.

ROC is a statistical analysis to assess the accuracy of an instrument in predicting a psychological/psychiatric disorder. The ROC curve provides conclusions about the comprehensive and visual illustrations of instrument predictive accuracy (Gonen, 2007). The ROC curve is generated from the tug of war between sensitivity and specificity at various points of intersection. From this ROC procedure will get the value of AUC which is between 50% and 100%. The 50% value is the worst AUC value, while 100% is the best AUC value. The cut-off scores for screening for hyperkinetic disorders can be determined by finding an optimal cutoff alternative by using the Microsoft Office Excel program (Dahlan, 2009). The optimal cutting point value will be the minimum limit to determine the possibility of hyperkinetic disorders.

Analysis of likelihood ratio (LR), LR+ and LR, is also performed to determine the magnitude of the contribution of SDQ screening results in determining the presence or absence of hyperkinetic disorders. Although this analysis is rarely used, it has more important benefits than sensitivity and specificity measurements alone and is the best way of measuring and expressing diagnostic accuracy. LR analysis can also be used for mental health screening instruments (Akobeng, 2006; Attia, 2003; McGee, 2002; Schmitz, Kruse & Tress, 2002; Sonis, 1999).

The correlation of the SDQ-TR screening result with the diagnosis from the psychologist towards the hyperkinetic disorder was analysed through the Chi-Square and Contingency Coefficient Statistic Analysis.

3. Result

3.1. The descriptive analysis

3.1.1. The demographic data

The descriptive analysis result from the collected 284 data shows that there are 27.47% subjects in the age of 7–8, 36.62% in the age of 9–10, 30.28% in the age of 11–12 and 5.63% in the age of 13–14. Based on the gender, data show that there are 77.82% male subjects and 22.18% female subjects. Most of subjects were in the age of 7–8, and male sexes. The results of the analysis of the demographic data can be seen in Table 1.

Table 1. Demographic data of research subjects

Gender	Age (year)				Total (%)
	7–8	9–10	11–12	13–14	
Boy	58	84	67	12	221 (77.82)
Girl	20	20	19	4	63 (22.18)
Total (%)	78 (27.47)	104 (36.62)	86 (30.28)	16 (5.63)	284 00)

3.1.2. The diagnosis data

The descriptive data analysis result from 222 diagnosis data shows that there were 76 research subjects who were diagnosed hyperkinetic disorder (34.23%). From the 76 subjects who were diagnosed a hyperkinetic disorder, 70 among them are males (92.1%) and six among them are females (7.9%). The most subject diagnosed hyperkinetic disorder was in the age of 9–10, and male sexes.

Table 2. Diagnosis data based on ICD-10

Age (year)	Hyperkinetic		Not hyperkinetic		Total (%)
	Boy	Girl	Boy	Girl	
7–8	17	5	24	12	58 (26.12)
9–10	29	0	44	15	59 (39.64)
11–12	19	1	27	14	61 (27.48)
13–14	5	0	8	2	15 (6.76)
Total (%)	70 (31.53)	6 (2.7)	103 (46.4)	43 (19.37)	222 (100)

3.2. The screening quality analysis

3.2.1. The ROC analysis

Based on the ROC analysis result at the hyperactive-inattention subscale score and the psychologist diagnosis score, it shows that the value of the AUC that was gained was 76.7% (95%IK, 70.6%–82.8%), $p < 0.001$. The AUC value was 76.7%, it means that if the hyperactive-inattention subscale score at the SDQ-TR was used to diagnoses whether there is or not the hyperkinetic disorder at the 100 patients, hence the correct conclusion will be gained from 76 patients. Based on the confidence level interval, it is known that the AUC value of the hyperactive-inattention subscale score SDQ-TR in the population range is 70.6%–82.8%. If referring to the quality standard of the instrument diagnostic according to Metz (1978) hence the SDQ-TR sensitivity and the specificity value was categorised to be average.

Table 3. Agreement between SDQ prediction and diagnosis

SDQ prediction	ICD-10 Hyperkinetic disorder diagnosis		Total
	Yes	No	
Positive	55	39	94
Negative	21	107	128
Total	76	146	222

The SDQ-TR optimum cut-off suggested by the ROC analysis to screen the hyperkinetic disorder is 6.5 with the sensitivity value of 72.4% and the specificity value of 73.3%. The researcher, in this case, used the cut-off with the complete number, hence the cut-off that was used is 7. It means that the patient who has SDQ-TR score ≥ 7 is the suspect in a hyperkinetic disorder. It is needed to do a deeper diagnosis.

3.2.2. The likelihood ratio analysis

Based on the LR analysis by using the cut-off ≥ 7 at the SDQ-TR score hyperactive-inattention subscales, the prevalence result of the hyperkinetic disorder is 34.23%, with the sensitivity 72.4% and the specificity 73.3%. It means, the using of the cut off ≥ 7 in the scoring result of the hyperkinetic-inattention subscale SDQ-TR, (1) is able to conduct the screening with the positive result of 72.4% patients who positively suffer the hyperkinetic disorder and (2) is able to conduct the screening with the negative result of 73.3% patients who did not suffer the hyperkinetic disorder.

The LR analysis result shows that the LR+ value that is 2.71 and the LR- that is 0.38 of the whole samples. It means the patients with the hyperkinetic disorder have the possibility 2.71 times higher to have the screening result which is positive at the inattention-hyperkinetic subscale SDQ-TR than the patients who do not have the hyperkinetic disorder. Whereas, the patients who have the hyperkinetic

disorder have the possibility 0.31 lower to have the negative screening result of the inattention-hyperactivity subscale SDQ-TR compared than the patients without the hyperkinetic disorder.

The Fagan Likelihood-Ratio Nomogram shows that if the patient has the positive test result based on the SDQ-TR hyperactive-inattention subscale, hence it is possible that she/he suffers hyperkinetic disorder and will increase from 35% to 59%. If a patient has the negative result based on the SDQ-TR hyperactive-inattention subscales, hence it is possible that she/he has the hyperkinetic disorder and will decrease from 35% to 17%.

3.3. The correlation between the SDQ-TR screening result and the psychologist's diagnosis

Based on the Chi-Square analysis result, it is known that there is a significant correlation in the SDQ-TR screening result with the psychologist's diagnosis to the hyperkinetic disorder (Pearson Chi-square = 42.676, significance < 0.05) with the value of the coefficient contingency 0.402. The value of the coefficient contingency shows that the correlations between the SDQ-TR screening result and the psychologist's diagnosis result are categorised to be average.

4. The Discussion

The sensitivity of the inattention-hyperactivity subscale SDQ-TR in this research is in line with the other research which has been conducted in many countries (such as in England, Sweden and Norway), that is ≥ 70%. The cut-off score ≥ 7 is a point higher than the original version. This is natural because generally, every country has the different cut-off, even in Sweden and Norway it is found that the cut-off ≥ 4 (Malmberg et al., 2003; Ullebo et al., 2011). It depends on the gold standard used and the culture that exists in each country (Becker et al., 2006; Shojaei et al., 2009).

The sensitivity and the specificity value based on the optimal cut-off value in this research is categorised to be average (the sensitivity 72.4% and the specificity 73.3%), in which the specificity value is higher than the sensitivity value. In the screening practice, it cannot be denied that it will be very important to attract the subjects as many as possible who are suspected suffering hyperkinetic disorder, though later there will be among those subjects who are not diagnosed hyperkinetic, this is correlated with the sensitivity value. Another thing that is not less important to be concerned is that whether the subjects who are not netted in this screening process are really undiagnosed hyperkinetic? This is correlated with the specificity value, which is how big the possibility of a person is without a hyperkinetic disorder will show the negative result in the SDQ-TR screening. Determining the higher specificity value is important to be considered in this research. Therefore, the researcher used the cut-off ≥ 7, to gain the specificity value which is higher than its sensitivity value.

The research result shows that there is a significant correlation between the hyperkinetic screening result based on the hyperactive-inattention subscales SDQ-TR with the hyperkinetic diagnosis result by the psychologist based on the ICD-10. It means that the teachers' perception of the children with the hyperkinetic disorder resembles the psychologist perception. If it seemed from whether this correlation is tight or not, the value of the contingency coefficient shows that this correlation is not strong enough. It means that in some cases there is perception difference between the psychologist and the teachers about the hyperkinetic disorder.

Teachers possibly have the perception that the students who show overactive (hyperactive) are often considered as the naughty children, and like to break the rule, in which it refers to the conduct problem. Meanwhile, the hyperactivity concept is different from the conduct problem according to the children psychopathology theory. The intended hyperactivity behaviour in the SDQ-TR is not correlated with the conduct problem. This is a very natural thing because teachers indeed do not have an adequate competency to value the children with the hyperkinetic disorder, but the presence of the perception correlation on the hyperkinetic between the teacher–psychologist had become enough

matter for the screening purpose. It means that the SDQ-TR is the questionnaire that can be trusted to be utilised as the screening instrument of the hyperkinetic disorder.

Based on the data analysis result conducted, some points can be concluded, namely:

1. The SDQ-TR sensitivity and specificity are categorised to be average it the cut-off ≥ 7 is used, in which this cut-off score is not very different with the cut-off score of the original version of SDQ-TR.
2. The screening result of the hyperkinetic based on the SDQ-TR hyperactive-inattention subscales has the correlation that is average significantly with the hyperactive diagnosis result by the psychologist based on the PPDGJ III.
3. The SDQ-TR that has been adapted can be used to conduct screening the hyperkinetic disorder with the cut-off score ≥ 7.

5. Suggestions

Based on this research result and discussion, to the future research it can be suggested some points, they are:

1. The future research may use the result of the adaptation of this SDQ-TR in Bahasa Indonesia to conduct the analysis to the SDQ-TR ability in conducting the screening to the other psychological disorder of the children.
2. The future research may conduct the analysis to the inattention-hyperactivity subscale cut-off score based on the gender.
3. The future research may do the improvement to the item 21 or the other items in the SDQ-TR where the sentences still show the covert behaviour.

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