THE INTERRATER RELIABILITY OF NURSING OUTCOME CLASSIFICATION (NOC): “SELF-CARE: EATING” ON MENTALLY DISABLED CHILDREN IN YOGYAKARTA

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Abstract

Background: The common problems suffered by children with intellectual disability are difficulty to perform of daily activities or self-care including eating activity. NOC Self-care: eating is a measurement of client’s status regarding eating skill after provides nursing intervention. NOC was translated into Indonesian and its indicators were operationalized. The measurement of self-care: eating need to be evaluated, thus the reliability of this instrument was tested to determine whether the NOC is also reliable for use in Indonesia.

Objective: The aim of this study was to investigate the interrater reliability of the NOC: Self-care: eating in the Indonesian Language in children with intellectual disability.

Methods: Two raters assessed 124 children with intellectual disability using NOC: Self-care: eating. The study was conducted on December 2017 to January 2018. NOC was translated into Indonesian and each indicator was operated. Kappa and percent agreement were used for the analysis.

Results: The overall kappa value of NOC: Self-care: eating was 0.55, while the percent agreement was 88. The highest kappa value and percent agreement was indicator of swallowing the food (0.8 and 99).

Conclusions: The interrater reliability of NOC: Self-care: eating in Indonesian was at the level of great reliability.

Keywords: NOC; self-care: eating; interrater reliability; children with intellectual disability

INTRODUCTION

Outcome in the classification are for use at individual or patient, family, and community level. The term of patient is used in the classification to indicate an individual who is the recipient of nursing care. The first NOC publication was issued in 1997 contained 190 outcomes. The second edition included 260 outcomes in 2000 and third edition contained 330 outcomes in 2004. The fourth edition was issued from 2008 with 385 outcomes (Moorhead et al., 2008). The firth edition consist of 490 outcomes has been translated to Indonesian.

The language used in the outcome describes the language used by nurses in the nursing literature and practice. Language used most consistently by nurse, rather than by those in
other disciplines, was selected for the outcomes whenever possible. Nevertheless, each country need the language and terms especially the language.

NOC Self-Care: eating is defined as ability to prepare and ingest food and fluid independently with or without assistive device (Moorhead et al., 2008). NOC Self-Care: eating is one of the NOC of Nursing diagnose (ND): feeding self-care deficit. ND: feeding self-care deficit is impaired ability to perform or complete self-feeding activity (Herdman & Kamitsuru, 2014). The NOC of ND: feeding self-care deficit are nutritional status, nutritional status: food and fluid intake, self-care: activities of daily living (ADL), self-care: eating, swallowing status (Johnson et al., 2006). NOC Self-Care: Activities of daily living (ADL) defined as the ability to perform the most basic physical task and personal care activity (Moorhead et al., 2008). There are 10 indicators from NOC Self-Care: Activities of daily living (ADL) such as ambulation: walking, transfer performance, ambulation: wheelchairs, toileting, bathing, hygiene, oral hygiene, eating, and dressing, and grooming.

The NOC checklist should valid and reliable before use to measure outcome of intervention. Validity is an important key to effective research and a requirement for both quantitative and qualitative research. Reliability is essentially a synonym for consistency and replicability over time, over instruments and over groups of respondents. It is concerned with precision and accuracy. As an instrument, NOC checklist should be valid and reliable. One of measuring of reliability of NOC checklist is to use interrater reliability. The reliability of this assessment process can be established by asking two individuals referred to as raters, to independently perform this assessment with the same set of objects (Gwet, 2014).

This recent study was conducted on Mentally Disability Children in Special School in Yogyakarta Indonesia. The reason why we conducted to children with mentally disability was because this group of children has the highest number of kinds of disability.

The measurement of NOC self-care: eating needs to be evaluated. Self-Care: eating is defined as ability to prepare and ingest food and fluid independently with or without assistive device (Moorhead et al., 2008). The NOC Self-Care: eating was then translated into Indonesian and its indicators were operationalized. The reliability of this instrument does not have been reported in Indonesian population. Therefore, it is needed test of this instrument to determine whether the NOC is reliable for use in Indonesia. The aim of this study was to investigate the interrater reliability of the NOC “Self-Care: eating” in the Indonesian language in children with mentally disability.

METHODS

Study design

This study used the cross-sectional design to measure the reliability of NOC Self-care: eating. The public special school of Bantul District was chosen as the study site.

Setting

This study was conducted from December 2017 to January 2018, involving 124 of children with mentally disability aged 6-12 years. The inclusion criteria specified children who attended in public special school of Bantul District and who had no others disabilities. This study recruited raters a month before to data collection. Two raters were assigned to measure the NOC. They were students form the Nursing Program, who had completed the pediatric nursing subject. Both of raters were given training prior in 4 hours. The aim of this training was to make both of the raters know and understand the method of measuring the rating scale in NOC indicators. Two raters observed children who had eating.

Sample

The reliability measurement was performed in 124 children with mentally disability who study in special school of Bantul District area.
The inclusion criteria specified children who attended in public special school of Bantul District and who had no others disabilities.

**Instrument**

The NOC Self-care: eating was design by (Moorhead et al., 2008). In this present study, the NOC Self-care: eating was translated into the Indonesian Language. Each indicator/item gives the operational definition and was observed on five-point score: score 1 if the item was severely compromised, 2 if the item was substantially compromised, 3 if the item was moderately compromised, 4 if the item was mildly compromised, and 5 if the item was not compromised. Each score in all of item of NOC Self-care: eating was developed by rubric (Table 1). A higher score indicated greater of self-care: eating. We recruited raters a month before to data collection. Two raters were assigned to measure the NOC. They were students form the nursing program, who had completed the pediatric nursing subject. Both of raters were given training prior in 4 hours. The aim of this training was to make both of the raters know and understand the method of measuring the rating scale in NOC indicators. Children who had eating were observed by two raters.

**Table 1 Criteria for measuring reliability of NOC Self-care: eating**

| Code   | Indicator                          | Operational Definition                                      | Literature/s                      | Rubric                                                                 |
|--------|------------------------------------|------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------|
| 030301 | Prepares food for ingestion        | The activity to prepare food with utensil                  | (Kaur & Kumar, 2013)              | 1. Ability or inability to take a plate/spoon/cup or glass although had been guided more than two (2) times.  
2. Ability to take a plate/spoon/cup/glass with guide of two (2) times.  
3. Ability to take a plate/spoon/cup or glass with guide one (1) time.  
4. Ability to take at least one of them (plate/spoon/cup/glass)  
5. Ability to take a plate, spoon and cup/glass. |
| 030302 | Open Containers                    | The activity to open the cover of food                     | (Kaur & Kumar, 2013)              | 1. Ability or inability to open food cover although had been guided more than two (2) times.  
2. Ability to open the food cover incompletely with guided one (1) time.  
3. Ability to open food cover with guide one (1) time  
4. Ability to open food cover incompletely without guide.  
5. Open food cover independently. |
| 030304 | Puts food into utensil              | The activity to put food with spoon or fork                 | (Ivy, 2014; Kaur & Kumar, 2013)   | 1. Ability to put food on spoon or fork with guided more than two (2) time.  
2. Ability to put food on spoon or fork with guided two (2) times.  
3. Ability to put food on spoon or fork with guided one (1) time  
4. Ability to put food on spoon or fork independently  
5. Ability to put food on spoon or fork with guided one (1) time |
| 030316 | Cuts up food                       | The activity to prepare food with take it with spoon or divide food into small part thus entry to mouth easier. | (Ivy, 2014; Kaur & Kumar, 2013)   | 1. Ability or inability to cut or take with spoon with guide > 2 times.  
2. Ability to cut or take with spoon with guided two (2) times  
3. Ability to cut or take with spoon with guided one (1) times  
4. Ability to cut or take with spoon incompletely by themselves.  
5. Ability to cut or take with spoon independently and nothing scattered |
| 030303 | Uses utensils                       | The activity to eat with spoon correctly                   | (Kaur & Kumar, 2013)              | 1. Ability or inability to hold spoon correctly with guided more than two (2) times.  
2. Ability to hold spoon correctly with guide two (2) times.  
3. Ability to hold spoon correctly with guided one (1) time.  
4. Ability to hold spoon correctly without guided.  
5. Ability to hold spoon correctly and independently. |
| Code     | Activity                          | Description                                                                                           |
|----------|-----------------------------------|-------------------------------------------------------------------------------------------------------|
| 030306   | Brings food to mouth with fingers | The activity to bring food into mouth with fingers                                                   |
|          |                                   | (Kaur & Kumar, 2013)                                                                                  |
|          |                                   | 1. Ability or inability to bring food to mouth with fingers with guided more than two (2) times.      |
|          |                                   | 2. Ability to bring food to mouth with fingers with guided two (2) times.                            |
|          |                                   | 3. Ability to bring food into mouth with fingers with guided one (1) time.                          |
|          |                                   | 4. Ability to bring food to mouth with finger independently but incompletely (scattered).           |
|          |                                   | 5. Ability to bring food to mouth with finger independently and completely.                        |
| 030307   | Brings food to mouth with container| The activity to bring food into mouth by spoon                                                       |
|          |                                   | (Ivy, 2014; Kaur & Kumar, 2013)                                                                     |
|          |                                   | 1. Ability or inability to bring food into mouth by spoon with guided more than two (2) times.      |
|          |                                   | 2. Ability to bring food into mouth by spoon two (2) times.                                         |
|          |                                   | 3. Ability to bring food into mouth by spoon with guided one (1) time.                             |
|          |                                   | 4. Ability to bring food into mouth by spoon independently but incompletely (scattered).          |
|          |                                   | 5. Ability to bring food into mouth by spoon independently and completely.                        |
| 030308   | Brings food to mouth with utensil  | The activity to bring food into mouth by fork                                                       |
|          |                                   | (Kaur & Kumar, 2013)                                                                                  |
|          |                                   | 1. Ability or inability to bring food into mouth by fork with guided more than two (2) times.      |
|          |                                   | 2. Ability to bring food into mouth by fork with guided two (2) times.                              |
|          |                                   | 3. Ability to bring food into mouth by fork with guided one (1) time.                              |
|          |                                   | 4. Ability to bring food into mouth by fork independently but incompletely (scattered).          |
|          |                                   | 5. Ability to bring food into mouth by fork independently and completely.                         |
| 030312   | Chews food                        | The activity to sublimate the food in the mouth                                                       |
|          |                                   | (Kaur & Kumar, 2013)                                                                                  |
|          |                                   | 1. Inability to chew the food (0 to 5-time chews) or ability with guided as much as twice.        |
|          |                                   | 2. Ability to chew the food with guided as much once.                                                |
|          |                                   | 3. Ability to chew the food completely with guided as much as once.                                |
|          |                                   | 4. Ability to chew the food independently                                                             |
|          |                                   | 5. Ability to chew the food independently and completely.                                          |
| 030313   | Swallows food                     | The activity to swallow food                                                                           |
|          |                                   | (Kaur & Kumar, 2013)                                                                                  |
|          |                                   | 1. Choking at least one-time during eating period.                                                    |
|          |                                   | 2. Choking 1-2 times during eating period.                                                           |
|          |                                   | 3. Ability to swallow food and need to mix with water                                                 |
|          |                                   | 4. Ability to swallow independently with longer time without choking.                               |
|          |                                   | 5. Swallow food completely without guided.                                                           |
| 030305   | Picks up cup or glass             | The activity to drink with cup or glass                                                                |
|          |                                   | (Kaur & Kumar, 2012)                                                                                  |
|          |                                   | 1. Ability or inability to picks up cup or glass with guided more than two (2) times.                |
|          |                                   | 2. Ability to picks up cup or glass incompletely (scattered) with guided one (1) time.              |
|          |                                   | 3. Ability to picks up cup or glass completely with guided one (1) time.                            |
|          |                                   | 4. Ability to picks up cup or glass independently but incompletely (scattered).                     |
|          |                                   | 5. Ability to picks up cup or glass independently and completely.                                   |
| 030309   | Drinks from a cup or glass         | The activity to drink with cup or glass.                                                              |
|          |                                   | (Kaur & Kumar, 2012)                                                                                  |
|          |                                   | 1. Ability or inability to drink with cup or glass with guided more than two (2) times.             |
|          |                                   | 2. Ability to drink with cup or glass incompletely (scattered) with guided one (1) time.           |
|          |                                   | 3. Ability to drink with cup or glass completely with guided one (1) time.                          |
|          |                                   | 4. Ability to drink with cup or glass independently but incompletely (scattered)                    |
|          |                                   | 5. Ability to drink with cup or glass independently and completely.                                 |
The activity to swallow fluid (Kaur & Kumar, 2013)

1. Ability or inability to swallow with guided more than two (2) times.
2. Ability to swallow with guided two (2) times.
3. Ability to swallow independently with guided one (1) time.
4. Ability to swallow independently but dripping or choking.
5. Ability to swallow independently and completely.

The activity to finish with clean their self and surrounding them and not spilled.

(Kaur & Kumar, 2013) (Bailey & Angell, 2005)

1. Ability or inability to finish and clean with guided more than two (2) times.
2. Ability to finish and clean with guided two (2) time.
3. Ability to finish or clean with guided one (1) time.
4. Ability to finish or clean independently but dripping.
5. Ability to finish and clean independently.

Ethical consideration
Ethical approval was obtained from the Medical and Health Research Committee (MHREC) of the Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, number KE/FK/0016/EC/2017.

Data analysis
The data were analyzed using computer and tested using kappa and percent agreement. Kappa and percent agreement were to find out the interrater reliability of every NOC indicator and overall NOC indicators. Kappa scale were classified into “Poor” if the value was less than 0.20, “Fair” if the value was 0.21-0.40, “Moderate” if the value was 0.41-0.60, “Good” if the value was 0.60-0.80, and “Very good” if the value was 0.80-1.00 (Marston, 2010).

RESULTS
The results showed that there was indicator of the NOC “self-care: eating” had the “fair” category kappa value (chews food). There were seven (7) indicators in the NOC “self-care: eating” in moderate category and six (6) indicators in NOC “self-care: eating” in substantial category. Indicators of NOC “self-care: eating” in moderate category were cuts up food, bring food to mouth with finger, bring food to mouth with utensil, picks up a cup or glass, drink with a cup or glass, swallows fluid, complete a meal. Meanwhile, prepare food for ingestion, open containers, puts food into utensil, uses utensil, bring food to mouth with container, and swallow food were in substantial category (Table 2).

| No | Indicators                       | Kappa | Percent Agreement |
|----|----------------------------------|-------|-------------------|
| 1  | Prepare food for ingestion       | .616  | 78%               |
| 2  | Open containers                  | .655  | 85%               |
| 3  | Puts food into utensil           | .639  | 80%               |
| 4  | Cuts up food                     | .468  | 91%               |
| 5  | Uses utensil                     | .649  | 95%               |
| 6  | Bring food to mouth with finger  | .547  | 89%               |
| 7  | Bring food to mouth with container | .638 | 90%            |
| 8  | Bring food to mouth with utensil | .412  | 79%               |
| 9  | Chews food                       | .365  | 97%               |
| 10 | Swallows food                    | .797  | 99%               |
| 11 | Picks up a cup or glass          | .487  | 85%               |
| 12 | Drink with a cup or glass        | .523  | 96%               |
| 13 | Swallows fluid                   | .432  | 97%               |
| 14 | Complete a meal                  | .451  | 77%               |
| Total |                                 | .549  | 88%               |
**Table 3 The final instrument in Indonesian Language**

| No | Items | 1 | 2 | 3 | 4 | 5 |
|----|-------|---|---|---|---|---|
| 1. | Menyiapkan makanan yang <br>akan disantap | Sangat teranggu | Banyak teranggu | Cukup teranggu | Sedikit teranggu | Tidak teranggu |
| 2. | Membuka tutup makanan | Mampu atau tidak mampu memegang sendok <br>atau gelas dengan arahan lebih <br>dari dua kali | Mampu mengambil piring atau sendok <br>atau gelas dengan arahan 2 kali | Mampu mengambil piring atau sendok <br>atau gelas, dengan arahan 1 kali | Mampu mengambil minimal salah satu <br>dari piring, sendok dan gelas. | Mampu mengambil piring, sendok dan gelas. |
| 3. | Manaruh/meletakkan makanan pada alat makan | Mampu atau tidak mampu meletakkan makanan pada sendok atau garpu dengan arahan lebih dari 2 kali | Mampu meletakan makanan pada sendok atau garpu dengan arahan 2 kali | Mampu meletakan makanan pada sendok atau garpu dengan arahan 1 kali | Mampu meletakan makanan pada sendok atau garpu secara mandiri dan rapi. | Mampu meletakan makanan pada sendok atau garpu secara mandiri dan rapi. |
| 4. | Memotong makanan | Mampu atau tidak mampu memotong/menyesuaikan dok makanan dengan arahan > 2 kali | Mampu memotong/menyesuaikan dok makanan dengan arahan 2 kali | Mampu memotong/menyesuaikan dok makanan dengan arahan 1 kali | Mampu memotong/menyesuaikan dok makanan dengan arahan 1 kali | Mampu memotong/menyesuaikan dok makanan dengan arahan 1 kali |
| 5. | Menggunakan alat makan | Mampu atau tidak mampu memegang sendok dengan benar dengan arahan > 2 kali | Mampu memegang sendok dengan arahan 2 kali | Mampu memegang sendok dengan arahan 1 kali | Mampu memegang sendok dengan arahan 1 kali | Mampu memegang sendok dengan arahan 1 kali |
| 6. | Memasukkan makanan ke mulut dengan jari | Mampu atau tidak mampu memasukkan makanan dengan jari dengan arahan > 2 kali | Mampu memasukkan makanan dengan arahan 2 kali | Mampu memasukkan makanan dengan arahan 1 kali | Mampu memasukkan makanan dengan arahan 1 kali | Mampu memasukkan makanan dengan arahan 1 kali |
| 7. | Memasukkan makanan ke mulut dengan sendok | Mampu atau tidak mampu memasukkan makanan ke mulut menggunakan sendok dengan arahan > 2 kali | Mampu memasukkan makanan ke mulut menggunakan sendok dengan arahan 2 kali | Mampu memasukkan makanan ke mulut menggunakan sendok dengan arahan 1 kali | Mampu memasukkan makanan ke mulut menggunakan sendok dengan arahan 1 kali | Mampu memasukkan makanan ke mulut menggunakan sendok dengan arahan 1 kali |
| 8. | Memasukkan makanan ke mulut | Mampu atau tidak mampu memasukkan makanan ke mulut | Mampu memasukkan makanan ke mulut | Mampu memasukkan makanan ke mulut | Mampu memasukkan makanan ke mulut | Mampu memasukkan makanan ke mulut |

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| 9. Mungkin makanan | Mampu makanan makanan makanan | Mampu makanan makanan makanan | Mampu makanan makanan makanan | Mampu makanan makanan makanan | Mampu makanan makanan makanan |
|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 10. Menelan makanan | Anak tersedak Anak tersedak | Anak tersedak Anak tersedak | Anak tersedak Anak tersedak | Anak tersedak Anak tersedak | Anak tersedak Anak tersedak |
| 11. Mengambil minuman dengan gelas/cangkir | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak |
| 12. Minum dengan gelas/cangkir | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak |
| 13. Menelan minuman | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak |
| 14. Menyesuaikan makanan | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak | Mampu atau tidak Mampu atau tidak |

DISCUSSION

NOC “Self-Care: eating” is one of the NOC of Nursing diagnose (ND) “feeding self-care deficit. ND: feeding self-care deficit is impaired ability to perform or complete self-feeding activity (Herdman & Kamitsuru, 2014). The NOC of ND: feeding self-care deficit are nutritional status, nutritional status; food and fluid intake, self-care: activities of daily living (ADL), self-care: eating, swallowing status (Johnson et al., 2006). NOC Self-Care: Activities of daily living (ADL) defined as the ability to perform the most basic

physical task and personal care activity (Moorhead et al., 2008). There are 10 indicators from NOC Self-Care: Activities of daily living (ADL) such as ambulation: walking, transfer performance, ambulation: wheelchairs, toileting, bathing, hygiene, oral hygiene, eating, and dressing, and grooming.

This finding is the first study regarding interrater of NOC self-care: eating in Indonesian version (See Table 3). The kappa coefficient in this present study was 0.54 (moderate category). Seganford and Almeida (2011) reported that NOC “self-care: activities
of daily living (ADL) was validated by experts. Previous study regarding eating as indicator of NOC self-care: activities of daily living (ADL) have moderate kappa coefficient (0.54) (Almeida et al., 2010).

Table 2 shows that a percent agreement of NOC Self-care: eating was 88%. The minimum acceptable limit for interrater reliability agreement was 0.61 (Marston, 2010). This finding indicates that the percent agreement, in which moderate kappa value and high percent agreement value. This finding is similar with previous study that reported the kappa coefficient of “NOC: Pain Control” in Spanish version was 0.48 (Bellido-Vallejo & Pancorbo-Hidalgo, 2017). This result regarding the percent agreement is consistent with previous study that reported the percent agreement of NOC “caregiver Performance: Direct care” in which the resulting percent agreement was high (0.80 or 80%) (Adisty et al., 2016). This finding showed NOC self-care: feeding in Indonesian Version has moderate kappa coefficient and high percent agreement. These indicate that NOC self-care: eating in Indonesian Version could be suitable to use as indicators of NOC self-care: feeding in mentally disabled children. It consistent to study conducted by Schneider et al. (2008) which reported that NOC was responsive to patient status change in the outcome categories including activities of daily living, cardiopulmonary status, coping, and illness management behavior. Even Head et al. (2004) reported there were six community-level outcomes have the greatest of content validity (community health: immunity, community risk control: communicable disease, community health status, community risk control: chronic disease, and community competence).

CONCLUSION

NOC Self-Care: eating has moderate (enough) Kappa value, so it could be used for measuring eating skill in Indonesian Mentally Disabled Children aged 6-12 years.

Declaration of Conflicting Interest
None declared.

Acknowledgments
We are grateful to Ministry of Research, Technology, and Higher Education of Indonesia for the funding support to conduct study. We would also like to acknowledge the children for their contribution to this study.

Author Contribution
All authors contributed equally in this study.

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Cite this article as: Hartini, S., Aprilia, KD, N., Nurjannah, N., Haryanti, F., Kholisa, I. L., Sunartini. (2018). The interrater reliability of nursing outcome classification (NOC): “self-care: eating” on mentally disabled children in Yogyakarta. Belitung Nursing Journal, 4(5), 448-456. https://doi.org/10.33546/bnj.506