



**VALIDITY OF THE CONSTRUCT AND RELIABILITY OF THE INDONESIAN VERSION OF THE *CANCER FATIGUE SCALE* (CFS) INSTRUMENT IN MEASURING *FATIGUE* IN CANCER PATIENTS**

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**ABSTRACT**

Cancer-related fatigue is one of the most frequent symptoms and has a significant impact on the quality of life of cancer patients. Accurate fatigue measurements require instruments that are valid and reliable, and appropriate to the cultural and linguistic context. Therefore, it is necessary to test the validity of the construct and reliability of the Indonesian version of the Cancer Fatigue Scale (CFS) before it is widely used. This study aims to test the validity of the construct and reliability of the Indonesian version of the Cancer Fatigue Scale (CFS) instrument in measuring fatigue in cancer patients. This study is an analytical descriptive research using a Cross Sectional design. This research was conducted at Darmas Cancer Hospital (RSKD). The number of samples was 220 people, with a sampling technique, namely purposive sampling. The instrument used in this study was the Cancer Fatigue Scale (CFS) as the core questionnaire. The data was analysed to test reliability and validity of instruments CFS. The results showed that all Indonesian version of CFS items had a total item–correlation value above the minimum acceptable limit ( $r > 0.30$ ), indicating adequate construct validity. The reliability test showed Cronbach's alpha value of 0.824, which indicated good internal consistency. The Indonesian version of the Cancer Fatigue Scale has been proven to have good construct validity and reliability, making it suitable for use as an instrument for measuring fatigue in cancer patients in oncology nursing research and practice.

Keywords: cancer fatigue scale; cancer patients; construct validity; fatigue; reliability

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**INTRODUCTION**

Deep cancer-related fatigue (CRF). Literature modern oncology understood as sensation tired Good physical, emotional, and persistent cognitive, not proportional with activity, no getting better with rest, and in a meaningful hinder function daily patient cancer (Bower, 2014). Definition This confirmed in the most recent PDQ-NCI summar, which also notes that fatigue is effect side most frequent from chemotherapy, radiotherapy, and transplantation cell hematopoietic (National Cancer Institue, 2024; Ver Hoeve et al., 2024)stem cells. A meta- analysis of 57 studies (34,310 participants ) in 2023 showed prevalence of severe CRF by 43% and prevalence overall (including mild ) 70.7%. Prevalence highest appears in the phase chemotherapy active and in cancer brain, while Woman own 1.4 times greater risk big compared to man (Ma et al., 2020; Yennurajalingam et al., 2023. CRF does not only impact on conditions physique patients, but also mental, social, and financial well-being they. CRF management has become focus important in practice oncology. Organization international recommend that screening and assessment fatigue done regularly since initial cancer diagnosis and repeated in a way periodically during therapy (Kang et al., 2023).

Approach proactive kind of This expected prevent impact bad CRF more continue and improve quality life patient. for assess CRF in a objective, various instrument measurement fatigue has

developed in a number of decade last. Until now Not yet There is a single “gold standard”, so diverse questionnaire used in research and practice clinical (Li et al., 2023). Review scoping latest identify dozens scale different ones used in The CRF study reached 58 types of instruments which included including Piper Fatigue Scale, Brief Fatigue Inventory, Multidimensional Fatigue Inventory, Fatigue Assessment Questionnaire, Functional Assessment of Cancer Therapy-Fatigue, Fatigue Severity Scale, until Cancer Fatigue Scale (CFS) (Adawiyah et al., 2024; Keane et al., 2024). Each instrument own characteristics and dimensions measurement separate. Diversity tool measuring This reflect complexity CRF concept as well the need standardization in evaluation fatigue in patients cancer.

In practice clinical nursing, use the right instrument is crucial for evaluation fatigue become consistent and accurate, allowing comparison between patient and monitoring repair symptom from time to time. One of the prominent instruments is Cancer Fatigue Scale (CFS). CFS is questionnaire short contains 15 grains designed questions special for measure fatigue in patients cancer (Okuyama et al., 2000). This measure three dimensions main fatigue, namely aspect physical, affective (emotional), and cognitive, according to with characteristics multidimensional CRF (Charalambous et al., 2016). CFS includes easy and fast instrument used time filling estimated not enough from 2 minutes so that practical for applied in clinics instruments (Şahin et al., 2018). This initially developed in Asia and has adapted to in various other languages along its widespread use in various countries (Lee et al., 2023).

The validity and reliability of the CFS have been lots proven through study cross-cultural. As example, version Brazil (Portuguese) from CFS has tested on patients cancer breasts and show characteristic strong psychometrics. Test results display high test-retest reliability (ICC coefficient  $\approx 0.95$ ) and good internal consistency in all three domains (Cronbach's  $\alpha > 0.70$ ) (Ivandra et al., 2019). In addition, the CFS score version Brazil own correlation meaningful with instrument other fatigue such as Piper Fatigue Scale and index depression, indicating validity adequate construction (Ivandra et al., 2019). Example another, the Korean version of CFS (CFS-K) has been through validation tests on survivors cancer and success confirm structure factor three appropriate dimensions theory (namely physical, affective, cognitive domains separate) through analysis factor confirmatory (Lee et al., 2025) CFS-K is also proven reliable ( $\alpha$  Cronbach = 0.875) and own significant correlation with instrument fatigue and quality life others, such as the FACT-F and EORTC QLQ-C30 (Lee et al., 2023).

Findings consistent from various studies international this strengthen that CFS is valid and reliable instruments for measure fatigue in the population patient various cancers. Indonesian context: Although CFS has available in various language, Indonesian version of instrument This along with proof its validity is still very limited. Currently, the assessment fatigue in patients cancer in Indonesia in general adopt instrument outside that has been translated informally. As illustration, Piper Fatigue Scale Indonesian version ever used in research local for evaluate level fatigue patient cancer undergoing chemotherapy (Adawiyah et al., 2024). Use instrument foreign without testing validity comprehensive potential giving rise to cultural and linguistic biases, so results the measurement Possible not enough accurate reflect condition Indonesian patients. Therefore that, is necessary effort adaptation and validity testing Indonesian version of CFS construct so that the instrument This guaranteed measure draft fatigue in accordance definition theory and context local.

Validity tested construct will ensure that grains CFS questions indeed represent dimensions fatigue (physical, affective, cognitive) in patients cancer in Indonesia in general intact. With availability Indonesian language CFS instrument that has been tested to be valid and reliable, nurses clinical can do measurement fatigue in a way more accurate and consistent information objective from measurement This would be very useful in the process of taking decision clinical – for example determine need intervention management fatigue or evaluation effectiveness therapy supporters (Adawiyah et al., 2024; Keane et al., 2024; Putri et al., 2021). In the end, the implementation of

validated CFS instrument in practice nursing oncology in Indonesia is expected can increase detection early detection and management of CRF, which leads to improvement quality life patient cancer in a way comprehensive.systematic.This study aims to test the validity of the construct and reliability of the Indonesian version of the Cancer Fatigue Scale (CFS) instrument in measuring fatigue in cancer patients.

## METHOD

Study This is study descriptive analytic with use design Cross Sectional Research This done in the room care Cempaka, Teratai, and Tulip accommodations and also rooms One Day Care at Darmais Cancer Hospital (RSKD). Implementation time February-April 2025. The sample size was 220 people, with The sampling technique is purposive sampling. The criteria are inclusion in research This is : patient advanced stage cancer, patients who are undergo therapy modality cancer, aged over 18 years, can reading and writing as well as speaking Indonesia, patients who are willing follow study with sign the informed consent. While That criteria exclusion his is patient cancer with functional status condition decreased, patient with worsening and not able follow research, patients who refuse for participate in research. Research This has get permits and licenses use questionnaire Cancer Fatigue Scale from (Okuyama et al., 2000)through registration permission from Elsevier. Instruments used in study This that is Cancer Fatigue Scale (CFS) as core questionnaire. The reliability test of CFS was (ICC coefficient  $\approx 0.95$ ) and good internal consistency in all three domains was (Cronbach's  $\alpha > 0.70$ ) (Ivandra et al., 2019).

## RESULT

Table 1.  
Distribution respondents based on age, education, occupation, marital status, income, year of diagnosis, stage, and condition physical (n= 220)

| Characteristics       | f (%)      | Characteristics                 | f (%)       |
|-----------------------|------------|---------------------------------|-------------|
| Gender                |            | Cancer Therapy                  |             |
| 1. Man                | 38 (17.3)  | 1. Chemotherapy Only            | 93 (42.3)   |
| 2. Woman              | 182 (82.7) | 2. Radiotherapy                 | 91 (41.4)   |
|                       |            | 3. Therapy Target               | 3 (1.4)     |
|                       |            | 4. Surgery                      | 33 (15.0)   |
| Education             |            | Cancer Stage                    |             |
| 1. Elementary School  | 29 (13.2)  | 1. Stage 2                      | 73 (33.2)   |
| 2. JUNIOR HIGH SCHOOL | 18 (8.2)   | 2. Stage 3                      | 120 (54.5)  |
| 3. SENIOR HIGH SCHOOL | 102 (46.4) | 3. Stage 4                      | 27 (12.3)   |
| 4. College            | 71 (32.3)  |                                 |             |
| Work                  |            | Hospital Visit                  |             |
| 1. civil servant      | 9 (4.1)    | 1. Inpatient                    | 77 (35.0)   |
| 2. Employee Private   | 12 (5.5)   | 2. Outpatient/ therapy Systemic | 143 (65.00) |
| 3. Self-employed      | 71 (32.3)  |                                 |             |
| 4. Housewife          | 118 (53.6) |                                 |             |
| 5. Retired            | 10 (4.5)   |                                 |             |
| Marital status        |            | Cancer Wound                    |             |
| 1. Marry              | 174 (79.1) | 1. There is a wound             | 47 (21.4)   |
| 2. Not married yet    | 15 (6.8)   | 2. n't any wound                | 173 (78.6)  |
| 3. Divorce on/off     | 31 (14.1)  |                                 |             |
| Income Monthly        |            | Cancer Drugs Used               |             |
| 1. < 1 million        | 102 (46.4) | 1. Cisplatin                    | 79 ( 35.9)  |
| 2. 1-5 million        | 88 (40.0)  | 2. PCH 5                        | 70 (31.8)   |
| 3. 5-10 million       | 27 (12.3)  | 3. Carboplatin                  | 19 (8.6)    |
| 4. > 10 million       | 3 (1.4)    | 4. Folfox 4A                    | 18 (8.2)    |
|                       |            | 5. VCR                          | 19 98.6)    |
|                       |            | 6. Bleomycin                    | 15 (6.8)    |
| Types of Cancer       |            |                                 |             |
| 1. Carcinoma          | 19 (8.6)   | 5. Cancer Breast                | 70 (31.80)  |
| 2. Sarcoma            | 6 (2.7)    | 6. Colorectal Cancer            | 18 (8.2)    |
| 3. Leukemia           | 9 (4.1)    | 7. Cancer Gynecology            | 79 (35.9)   |
| 4. Lung Cancer        | 19 (8.6)   |                                 |             |

Table 1, the majority respondents is female (82.7%), high school educated (46.4%), status married (79.1%), and working as Mother House stairs (53.6%). Most of originate from group economy medium to lower with income below 1 million rupiah per month. Type of cancer most is cancer gynecology (35.9%), with part big undergo chemotherapy (42.3%) or radiotherapy (41.4%), as well as are at stage 3 (54.5%). Most of them respondents undergo care road (65.0%), has undergo treatment not enough than 5 years (90.0%), and using Cisplatin as therapy main (35.9%).

Table 2.

Overview of Respondents' *Fatigue Levels*

| <i>Fatigue</i>    | f (%)      |
|-------------------|------------|
| Physique          |            |
| No <i>Fatigue</i> | 125 (56.8) |
| <i>Fatigue</i>    | 95 (43.2)  |
| Affective         |            |
| No <i>Fatigue</i> | 58 (26.4)  |
| <i>Fatigue</i>    | 162 (73.6) |
| Cognitive         |            |
| No <i>Fatigue</i> | 83 (37.7)  |
| <i>Fatigue</i>    | 137 (62.3) |

Table 2 shows that fatigue in patients spread in three dimensions : physical, affective, and cognitive. Most of respondents No experience fatigue physical (56.8%), however majority experience fatigue affective (73.6%) and cognitive (62.3%). Findings This indicates that aspect emotional and cognitive is component the most dominant *fatigue* in population study This

Table 3.

Results of the Validity and Reliability Test of Cancer *Fatigue Scale* (CFS) (N=30)

| No | Question Items                                                 | Correlation item | Cronbach's Alpha |
|----|----------------------------------------------------------------|------------------|------------------|
| 1  | Whether You feeling tired/exhausted?                           | .428             |                  |
| 2  | Whether You feel want to lie down ?                            | .441             |                  |
| 3  | Whether You feeling constantly tired continuous / fatigue ?    | .427             |                  |
| 4  | Whether You feel has become careless ?                         | .471             |                  |
| 5  | Whether You feel powerful ?                                    | .370             |                  |
| 6  | Whether body You felt heavy and tired ?                        | .468             |                  |
| 7  | Whether You feel that You more often make error moment speak ? | .451             |                  |
| 8  | Whether You feel interested do something ?                     | .450             | 0.824            |
| 9  | Whether You feel fed up ?                                      | .447             |                  |
| 10 | Whether You feel easy forget something matter ?                | .503             |                  |
| 11 | Whether You Can concentrate on things certain ?                | .563             |                  |
| 12 | Whether You feel reluctant in do something ?                   | .476             |                  |
| 13 | Whether You feel that You become more slow in think ?          | .420             |                  |
| 14 | Whether You Can push self Alone in do something ?              | .448             |                  |
| 15 | Whether You feel fatigue so that No know must do What ?        | .437             |                  |

Table 3 presents readability and reliability test results instrument *Cancer Fatigue Scale* ( CFS) is used in study This is based on data from 30 respondents. Readability test done through analysis item-total correlation, which shows strength connection between each question item with total scale score. Item correlation values range from between 0.370 to 0.563. Items with correlation highest is the 11th item, namely " Is You Can concentrate on things certain ?" (r = 0.563), whereas mark correlation lowest found in item 5, " Is You feel powerful ?" (r = 0.370). All items show mark correlation is above 0.30, which indicates that all items have adequate and relevant readability to construct measured fatigue. Calculation results reliability instrument in a way overall show mark Cronbach's Alpha coefficient of 0.824. This value show that instrument own high reliability and can used in a way consistent in measure level fatigue in respondents with condition cancer. With Thus, the results of the readability test This strengthen that adaptation CFS questionnaire to in Indonesian no only can understood with both by respondents, but also have adequate validity and consistency for application in study and practice clinical.

## DISCUSSION

Fatigue related Cancer -related fatigue (CRF) is one of the symptom most frequent and most disturbing in patients cancer (Ivandra et al., 2019). Study show up to 58–94% of patients cancer

experience fatigue during therapy, and about 30–40% of survivors Still feel fatigue for years post- (Okuyama et al., 2000)therapy. Persistent fatigue This impact negative on function daily and quality life patients, however often No reported and less handled in a way adequate (Ivandra et al., 2019). Therefore that, accurate CRF assessment with instrument standardized is very much needed in the facility health. Various instruments ( more of 40 scales ) has developed for evaluate fatigue ; one of the recognized superior in a way psychometrics is Cancer Fatigue Scale ( CFS). CFS was first developed in Japan. as 15-item scale that assesses fatigue in three dimensions that is physical, affective, and cognitive in a way concise However comprehensive (Okuyama et al., 2000; Şahin et al., 2018) Instrument This popular Because short but covers the main domain fatigue and ease filled in by the patient, so that in accordance for use in practice clinical and research on patients cancer.

Analysis validity construct The Indonesian version of the CFS instrument is based on item-total correlation and shows adequate results. In the study This each item has item-total correlation above 0.30, exceeding the common minimum limit used for ensure each item contributes significant to construct overall (Amarsheda & Bhise, 2022; O'Regan et al., 2019). The correlation value is above 0.30 show good item homogeneity, so that No there are items that need to be set aside Because weak relation with total score. Findings This in line with results validation of the Korean version of CFS which also reported No there is a problematic item Where all item-total correlation shows value  $\geq 0.30$  so that Good both Indonesian and English versions Korean version meets criteria validity similar constructs, showing structure three consistent dimensions (physical, affective, cognitive ) (Lee et al., 2025).

Internal consistency of the Indonesian version of CFS is stated with Cronbach's alpha value is 0.824 (N=30), which indicates good internal reliability. This value exceed the common minimum threshold of 0.70 used in psychometric and indicates that CFS items are interrelated correlated in a way adequate in measure fatigue related cancer (Rodriguez-Gonzalez et al., 2022). As comparison, the CFS study in Korea reported alpha = 0.806, which is still is at in range reliability that can be accepted. With Thus, the internal reliability of the Indonesian version is equivalent or even A little more tall than Korean version, and is also consistent with a number of validation other international ones which are generally found CFS alpha in the 0.80s (Guarda Korelo et al., 2019; Lee et al., 2025)range.

There are differences alpha value between instrument Can influenced by characteristics sample and quantity respondents. As example in version Turkey Cronbach's alpha 0.824 at N=30 indicates good consistency, though sample relatively small (Şahin et al., 2018). Another study with sample more big also get mark similar. This is indicates that CFS is capable of maintain internal stability in various population. However, the reliability subscale affective tend more low which indicates complexity aspect affective fatigue (Charalambous et al., 2016). In a way Overall, the internal consistency and item relevance of the Indonesian CFS are adequate. for measure multidimensional fatigue in patients cancer, according to with principles measurement psychological and findings study previous.

## **CONCLUSION**

Based on validity test results construct and reliability instrument Cancer Fatigue Scale (CFS) Indonesian version, can concluded that instrument This own quality good psychometrics in measure fatigue in patients cancer. All items show mark item–total correlation above the minimum acceptable limit accepted, which indicates that every grains question contribute in a way significant in represent construct fatigue. In addition, the Cronbach's alpha value of 0.824 indicates level good internal consistency, so that instrument This capable produce stable and reliable measurements. With Thus, the Indonesian version of the CFS is declared valid and reliable. as well as worthy used as tool measuring fatigue in patients cancer in context study and practice nursing oncology.

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