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Validation of Unmet Supportive Care Needs Survey on Partners and Their Caregivers: A Psychometric Approach of the Malay Version

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As efforts to address unmet supportive care needs evolve, increasing attention has been directed toward the well-being of both cancer patients and their caregivers in Malaysia. This study aimed to evaluate the psychometric properties of the Malay version of the Supportive Care Needs Survey for Partners and Caregivers (SCNS-P&C-M), focusing on the multidimensional needs of caregivers of cancer patients. A cross-sectional study was conducted involving 222 adult partners and caregivers across various healthcare settings in Malaysia. The SCNS-P&C-M encompasses four key domains: psychological, practical, informational, and emotional support needs. Psychometric evaluation included assessments of content validity, internal consistency, construct validity, as well as convergent and discriminant validity. Content validity indices were high, with S-CVI/UA at 0.88 and S-CVI/Ave at 0.96. Expert ratings indicated strong agreement across relevance (0.99), clarity (0.95), simplicity (0.95), and minimal ambiguity (0.94). The model showed good fit based on confirmatory factor analysis (CFA), with CFI, TLI, and RMSEA values within acceptable thresholds. Internal consistency was excellent, with composite reliability ranging from 0.760 to 0.971 across domains and 0.983 for the overall scale. Convergent validity was satisfactory, while discriminant validity was supported. In conclusion, the SCNS-P&C-M demonstrated strong psychometric properties, confirming its reliability, validity, and cultural appropriateness for use among Malaysian caregivers. This tool offers a valuable framework for identifying and addressing the specific unmet needs of cancer caregivers in clinical and community settings.

Keywords: supportive care; spouses; caregivers; Malay version; psychosocial oncology

I. INTRODUCTION

Supportive care needs are dynamic and evolve across the cancer trajectory; therefore, a uniform approach may be insufficient. Tailored interventions are required to address the distinct challenges faced by family members at different stages of the disease (Fitch, 2008; Fletcher *et al.*, 2012; Faccio *et al.*, 2018; Samuelsson *et al.*, 2022). The Supportive Care Needs Survey for Partners and Caregivers (SCNS-P&C) was developed as a comprehensive tool to assess the multifaceted needs of caregivers, encompassing emotional, informational, practical, and physical domains (Girgis *et al.*, 2011). Caregivers often experience substantial strain, and unmet

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needs have been linked to significant psychological morbidity (Armoogum *et al.*, 2013). By systematically identifying these needs, the SCNS-P&C enables healthcare professionals to deliver targeted interventions that reduce caregiver burden and improve overall well-being (Hodgkinson *et al.*, 2007). Evidence also highlights that supporting caregivers' emotional and social needs enhances patient outcomes, whereas caregiver distress may compromise the quality of care provided (Farran *et al.*, 1993; Moroni *et al.*, 2008).

Although caregiving presents considerable challenges, it may also foster resilience, personal growth, and strengthened relationships (Genter *et al.*, 2021; Sangruangake *et al.*, 2022; Opsomer *et al.*, 2023). The SCNS-P&C has been translated and validated in Thai, Swedish, French, Dutch, Chinese, and German contexts, with most versions retaining the original four domains which are health service, psychological, work/social, and information needs which demonstrated high reliability (Cronbach's α = 0.77–0.98) (Sklenarova *et al.*, 2015; Baudry *et al.*, 2019; Rietveld *et al.*, 2019; Sangruangake *et al.*, 2022; Samuelsson *et al.*, 2023; Wang *et al.*, 2023). Notably, the Chinese version identified six domains, reflecting cultural differences in how caregiver needs are conceptualised, though internal consistency remained acceptable (α = 0.70–0.90).

Despite its wide application, a Malay version has yet to be developed. This study addresses this gap by evaluating the psychometric properties of the SCNS-P&C-M among Malaysian cancer caregivers, aiming to provide a culturally relevant tool to accurately capture and address their unmet supportive care needs.

II. MATERIALS AND METHOD

A. Sampling and Data Collection Procedure

This study utilised a cross-sectional design to validate the Supportive Care Needs Survey for Partners and Caregivers (SCNS-P&C). The SCNS-P&C was intended to assess the unmet supportive care needs of partners and caregivers of patients, focusing on domains such as psychological, practical, informational, and emotional needs. Participants were partners and caregivers of patients who diagnosed with any cancer type and at any stage of cancer, age 18 years and above and able to speak either English or Malay. They were recruited while waiting with their spouses for treatment at the Oncology Clinic in Hospital Pulau Pinang and the Daycare Unit at Pusat Perubatan Universiti Sains Malaysia (PPUSMB), Universiti Sains Malaysia. However, those who were paediatrics caregivers and healthcare providers from the patients received treatment were excluded. Data collection was conducted between June and December 2024.

By using the general rule of five-respondents-to-one-item ratio, a total of 222 partners and caregivers were interviewed via face-to-face interview with 3 drop out due to unfulfilled inclusion criteria. Convenience sampling was used in sampling the study participants. After receiving written consent from the participants, they were requested to complete the SCNS-P&C, which consists of information on demographics, `Health Care Service Needs`, `Psychological and Emotional Needs`, `Work and Social Needs` and `Information Needs`(Girgis, Lambert and Lecathelinais, 2011).

B. Instrumentation

This study employed the original 45-item short-form Supportive Care Needs Survey for Partners and Caregivers (SCNS-P&C) with permission from the original author. Responses from the instruments were rated on a five-point Likert scale, ranging from 1 (no need, not applicable) to 5 (high need for help) (Girgis *et al.*, 2011). In the first phase, a native Malay speaker and a bilingual expert from the research team undertook translation into Malay. The translated version was then reviewed and refined before undergoing back-translation by an independent bilingual expert unfamiliar with the original instrument. Harmonisation of the forward- and back-translated versions was conducted by a panel of oncologists, public health specialists, and senior academics, resulting in the first draft of the SCNS-P&C-M.

Content validity was subsequently assessed by a panel of experts who rated each item for relevance using three categories: not relevant, relevant, or very relevant. Item-level content validity index (I-CVI) was calculated as the proportion of experts rating an item as relevant or very relevant, with values ≥0.83 considered acceptable. Scale-level indices were also computed: S-CVI/UA (universal agreement) and S-CVI/Ave (average agreement). High content validity was indicated by S-CVI/UA >0.80 and S-CVI/Ave >0.90.

C. Statistical Analysis

All statistical analyses were conducted using SPSS version 28 (SPSS Inc., Chicago, IL, USA), with confirmatory factor analysis (CFA) performed separately in SPSS Amos version 26. Descriptive statistics summarised socio-demographic and clinical characteristics, reporting categorical variables as frequencies with percentages and continuous variables as means with standard deviations.

Reliability of the SCNS-P&C-M was evaluated through internal consistency and temporal stability. Cronbach's alpha values ≥0.70 were considered acceptable, while composite reliability (CR) values ≥0.80, derived from CFA loadings, indicated satisfactory reliability. Construct validity was assessed using exploratory factor analysis (EFA), CFA, and convergent/discriminant validity testing. Normality of subscales was confirmed by skewness and kurtosis values.

EFA employed parallel analysis, comparing maximum likelihood eigenvalues with simulated datasets, retaining factors where observed eigenvalues exceeded simulated ones. Sampling adequacy was verified using the Kaiser–Meyer–Olkin (KMO>0.60) and Bartlett's test of sphericity ($p<0.05$). Direct Oblimin rotation allowed for correlated factors, and items with loadings ≥0.40 were retained.

CFA model fit was evaluated using multiple indices: non-significant chi-square ($p>0.05$), $\chi^2/df < 3.0$, TLI and CFI ≥0.95, GFI ≥0.90, and RMSEA <0.06. Convergent validity was supported when average variance extracted (AVE) exceeded 0.50, and discriminant validity when the square root of AVE for each factor surpassed inter-construct correlations.

III. RESULT

A. Participants' Characteristics

A total of 222 participants were included in the study, with the majority being female (65.8%) and of Malay ethnicity (84.0%). The mean age was 41.56 years (SD = 14.88), ranging from 18 to 72 years. In terms of employment, 36.1% were unemployed, 21.0% were employed in the private sector, and 17.4% in the government sector. Most caregivers had experience supporting patients with breast cancer (42.3%), followed by nasopharyngeal cancer (28.9%) and lung cancer (3.6%). Additionally, 49.5% reported a family history of cancer (Table 1).

B. Content Validity Index of the SCNS-P&C-M

The content validity of the instrument was assessed using both the Scale-level Content Validity Index by Universal Agreement (S-CVI/UA) and the Average method (S-CVI/Ave), which yielded values of 0.88 and 0.96 respectively which indicating excellent agreement among experts. A panel of experts independently evaluated each item across four dimensions: relevance (0.99), clarity (0.95), simplicity (0.95), and ambiguity (0.94) for S-CVI/Ave. Experts rated each item based on its alignment with the study objectives, clarity of language, ease of understanding, and potential for misinterpretation. Items were refined based on expert feedback to ensure that the original meaning was preserved, and terminologies were adjusted where necessary for cultural and linguistic appropriateness. This is to ensure that the item is more understandable and applicable to caregivers and partners (Polit *et al.*, 2007).

Table 1. Characteristics of the participants (N=222)

	Frequency, n (%)
Gender	
Male	76 (34.2)
Female	146 (65.8)
Age (Mean±SD)	41.56±14.88
Max (years)	72
Min (years)	18
Ethnicity	
Malay	189 (84.0)
Chinese	21 (9.3)
Indian	13 (5.8)
Others	2 (0.9)
Occupation	
Government sector	38 (17.4)
Private sector	46 (21.0)
Self-employed	33 (15.1)
Pensioner	23 (10.5)
Not working	79 (36.1)
Diagnosis	
Breast cancer	82 (42.3)
Nasopharyngeal cancer	56 (28.9)
Lung cancer	7 (3.6)
Prostate cancer	5 (2.6)
Tongue cancer	5 (2.6)
Others	39 (20.0)
Family history of cancer	
Yes	110 (49.5)
No	112 (50.5)

Notes: SD: standard deviation

C. Exploratory and Confirmatory Factor Analyses of SCNS-P&C-M

Table 2 presents the Exploratory Factor Analysis (EFA) results for the SCNS-P&C-M, with most factor loadings above 0.50, supporting construct validity. The Kaiser–Meyer–Olkin (KMO) value of 0.925 confirmed sampling adequacy, while Bartlett's Test of Sphericity ($p<0.05$) indicated suitability for factor analysis. The measurement model comprised 44 items across four domains, Psychosocial and Emotional needs (21 items), Daily Living needs (13 items), Health System and Information needs (5 items), and Personal and Financial needs (5 items). However, only one item was excluded due to low loading.

Confirmatory Factor Analysis (CFA) further supported the model (Figure 1). The χ^2/df ratio was 2.99, reflecting marginally acceptable fit. Fit indices demonstrated adequacy: CFI = 0.910 and TLI = 0.901 (both>0.90), RMSEA = 0.065 (<0.08), and GFI = 0.891, slightly below the conventional cutoff but acceptable given model complexity. Overall, the hypothesised four-factor structure demonstrated satisfactory validity and fit to the observed data.

Table 2. SCNS-P&C-M items and factor loadings in exploratory factor analysis (n=222)

Domain and Item number	Mean ± SD	Factor loadings
Psychosocial and Emotional needs		
Item 13	3.84 (1.31)	0.506
Item 14	3.97 (1.31)	0.580
Item 15	3.67 (1.36)	0.736
Item 16	3.88 (1.18)	0.648
Item 17	3.94 (1.15)	0.402
Item 19	3.33 (1.36)	0.532
Item 20	3.29 (1.48)	0.482
Item 21	3.53 (1.35)	0.412
Item 26	3.68 (1.35)	0.732
Item 27	3.78 (1.31)	0.897
Item 28	3.80 (1.32)	0.924
Item 29	3.52 (1.32)	0.422
Item 32	3.20 (1.41)	0.500
Item 33	3.83 (1.22)	0.778
Item 34	3.60 (1.34)	0.793
Item 35	3.68 (1.26)	0.671
Item 37	3.36 (1.37)	0.626
Item 38	3.88 (1.26)	0.753
Item 43	3.65 (1.23)	0.850
Item 44	3.59 (1.30)	0.673
Item 45	3.52 (1.27)	0.528
Daily Living needs		
Item 1	3.49 (1.18)	0.802
Item 2	3.60 (1.15)	0.880
Item 3	3.62 (1.24)	0.863
Item 4	3.42 (1.12)	0.819
Item 5	3.55 (1.19)	0.670
Item 6	3.76 (1.20)	0.812
Item 7	3.92 (1.28)	0.645
Item 8	3.71 (1.21)	0.622
Item 9	3.32 (1.33)	0.525
Item 10	3.70 (1.21)	0.547
Item 11	3.73 (1.34)	0.544
Item 12	3.70 (1.22)	0.506
Item 22	3.37 (1.30)	0.356
Health System and Information needs		
Item 18	2.93 (1.43)	0.513
Item 23	3.80 (1.26)	0.555
Item 24	3.12 (1.52)	0.674
Item 25	2.22 (1.47)	0.729
Item 30	3.09 (1.24)	0.491
Personal and Financial needs		
Item 31	3.97 (1.04)	0.346
Item 39	3.61 (1.22)	0.637
Item 40	3.20 (1.26)	0.719
Item 41	3.69 (1.19)	0.457
Item 42	3.12 (1.36)	0.619

Notes: SD = standard deviation; Extraction Method: Principal Component Analysis, Cronbach alpha = 0.976, Kaiser-Meyer-Olkin = 0.925

D. The convergent and Discriminant Validity of SCNS-P&C-M

Convergent validity was evaluated using Average Variance Extracted (AVE). Domains Psychosocial and Emotional (0.620) and Daily Living (0.636) needs showed adequate convergent validity, with AVE values above the recommended threshold of 0.50. In contrast, Domain Personal and Financial (0.492) and Health System and Information (0.423) needs recorded lower AVE values, indicating limited shared variance among their items. Discriminant validity was assessed using the Fornell-Larcker criterion. The square roots of AVE for Domains Psychosocial and Emotional (0.787), Daily Living (0.797), Personal and Financial (0.626) and Health System and Information (0.650) needs were higher than their correlations with other domains, supporting good discriminant validity.

E. Reliability of the SCNS-P&C-M (Internal Consistency and Composite Reliability index)

The reliability coefficients on the original English version's has proposed 4-factor structure comprising 45 items with Cronbach`s alpha recorded between 0.88 to 0.94 (Girgis *et al.*, 2011).

In our current study, an exploratory factor analysis (EFA) was conducted to explore a more appropriate factorial structure for the translated version of SCNS-P&C-M (Table 3). The internal consistency shows strong consistency across domains, with a Cronbach's α of 0.976 (Table 3). The SCNS-P&C-M demonstrated strong internal reliability across its four domains, with Cronbach's alpha coefficients of 0.971 and 0.957 for both Psychosocial and Emotional needs and Daily Living needs, 0.802 for Personal and Financial needs, and 0.794 for Health System and Information needs.

Meanwhile, the composite reliability index ranging from 0.760 to 0.971 for all four domains with combination of SCNS-P&C-M with 0.983 which showed acceptable reliability (Table 3). All domains met or exceeded the recommended threshold of 0.70, indicating that the items within each domain consistently measured their respective constructs.

Table 3. The internal consistency and composite reliability index of the SCNS-P&C-M

Domain	**Internal consistency (Cronbach`s alpha)**
Psychosocial and Emotional needs	0.971
Daily Living needs	0.957
Health System and Information needs	0.794
Personal and Financial needs	0.802
Domain	**Composite Reliability Index**
Psychosocial and Emotional needs	0.971
Daily Living needs	0.958
Health System and Information needs	0.760
Personal and Financial needs	0.784

In Table 4, most items in the SCNS-P&C showed low floor effects, indicating good relevance to caregivers. However, domains such as Psychosocial and Emotional Needs and Daily Living Needs showed high ceiling effects across all items. This suggests consistently high unmet needs, but also limited ability of the tool to differentiate between moderate and very high needs. Overall, the instrument was applicable, though the ceiling effects may affect its sensitivity.

IV. DISCUSSION

The present study successfully adapted and validated the Supportive Care Needs Survey for Partners and Caregivers (SCNS-P&C) into Malay (SCNS-P&C-M), filling a critical gap for assessing the unmet supportive care needs among Malaysian cancer caregivers. The translation and psychometric evaluation process closely followed international guidelines, ensuring cultural and linguistic appropriateness while retaining the instrument's conceptual structure (Sklenarova *et al.*, 2015; Baudry *et al.*, 2019; Rietveld *et al.*, 2019; Samuelsson *et al.*, 2022; Sangruangake *et al.*, 2022; Wang *et al.*, 2023). High item and scale level content validity indices confirmed expert agreement regarding the relevance of the translated items to the caregiving context in Malaysia. This supports previous findings that adaptation of supportive care tools across diverse populations is feasible and necessary to address unique sociocultural needs (Sklenarova *et al.*, 2015; Baudry *et al.*, 2019; Rietveld *et al.*, 2019; Samuelsson *et al.*, 2023; Wang *et al.*, 2023).

The study observed that the four-domain structure of the original SCNS-P&C which covering health service, psychological/emotional, work/social, and information needs was largely preserved, aligning with validations in other languages (Sklenarova *et al.*, 2015; Baudry *et al.*, 2019; Rietveld *et al.*, 2019; Samuelsson *et al.*, 2023; Wang *et al.*, 2023). Confirmatory factor analysis (CFA) indicated an acceptable model fit, with fit indices (CFI, TLI, RMSEA) reaching or closely approaching recommended thresholds. Although the Goodness of Fit Index (GFI) was marginally below the ideal cutoff, this can be attributed to model complexity and parallels findings in other validation studies where GFI values below 0.90 still coincided with overall satisfactory fit. These results reinforce the robustness of the SCNS-P&C factor structure across cultural contexts and demonstrate its relevance for Malaysian caregivers.

Reliability analyses demonstrated strong internal consistency across all domains, with Cronbach's alpha and composite reliability values exceeding established cutoffs ($\alpha \geq 0.70$, $CR \geq 0.80$). Such findings are consistent with previous validations reporting high reliability for the SCNS-P&C, underscoring the tool's consistency in measuring caregiver needs across cultures (Sklenarova *et al.*, 2015;

Baudry *et al.*, 2019; Rietveld *et al.*, 2019; Samuelsson *et al.*, 2023; Wang *et al.*, 2023). The instrument also demonstrated strong convergent and discriminant validity, as indicated by appropriate AVE values and the distinction between subscale constructs.

A notable observation in this study was the pronounced ceiling effect in the domains of psychosocial/emotional and daily living needs, suggesting persistently high unmet needs among caregivers. While this highlights the pressing psychological burden within this population, it may also point to limited sensitivity of the instrument in distinguishing between moderate and very high levels of need. Similar ceiling effects have been reported in other caregiver populations, reflecting the profound impact of caregiving on emotional well-being and daily functioning.

These insights emphasise the necessity of regular assessment and tailored psychosocial interventions for caregivers throughout the cancer trajectory (Hodgkinson *et al.*, 2007; Fitch, 2008; Samuelsson *et al.*, 2022).

Table 4. Floor and ceiling effects for each domains (N=222)

Domain	Item	Score = 1	Score = 5	Total responses	Floor (%)	Ceiling (%)
1	13	10	101	222	4.5%	45.5%
1	14	12	119	222	5.4%	53.6%
1	15	11	90	222	5.0%	40.5%
1	16	8	87	222	3.6%	39.2%
1	17	4	97	222	1.8%	43.7%
1	19	20	61	222	9.0%	27.5%
1	20	32	70	222	14.4%	31.5%
1	21	21	70	222	9.5%	31.5%
1	26	12	88	222	5.4%	39.6%
1	27	10	92	222	4.5%	41.4%
1	28	8	100	222	3.6%	45.0%
1	29	17	72	222	7.7%	32.4%
1	32	35	50	222	15.8%	22.5%
1	33	9	86	222	4.1%	38.7%
1	34	18	72	222	8.1%	32.4%
1	35	11	75	222	5.0%	33.8%
1	37	22	64	222	9.9%	28.8%
1	38	2	105	222	0.9%	47.3%
1	43	9	68	222	4.1%	30.6%
1	44	15	74	222	6.8%	33.3%
1	45	18	63	222	8.1%	28.4%
2	1	11	52	222	27.0%	15.8%
2	2	8	56	222	7.7%	39.6%
2	3	11	67	222	26.1%	27.0%
2	4	10	36	222	52.7%	11.3%
2	5	13	56	222	14.4%	14.0%
2	6	6	81	222	5.0%	23.4%
2	7	3	111	222	3.6%	25.2%
2	8	8	74	222	5.0%	30.2%
2	9	25	54	222	4.5%	16.2%
2	10	9	72	222	5.9%	25.2%
2	11	7	96	222	2.7%	36.5%
2	12	12	72	222	1.4%	50.0%
2	22	20	57	222	3.6%	33.3%
3	18	60	35	222	11.3%	24.3%
3	23	17	88	222	4.1%	32.4%
3	24	58	60	222	3.2%	43.2%

3	25	117	25	222	5.4%	32.4%
3	30	32	31	222	9.0%	25.7%
4	31	7	83	222	3.2%	37.4%
4	39	22	55	222	9.9%	24.8%
4	40	34	34	222	15.3%	15.3%
4	41	15	64	222	6.8%	28.8%
4	42	41	44	222	18.5%	19.8%

Notes: Domain 1: Psychosocial and Emotional needs, Domain 2: Daily Living needs, Domain 3: Health System and Information needs, Domain 4: Personal and Financial need

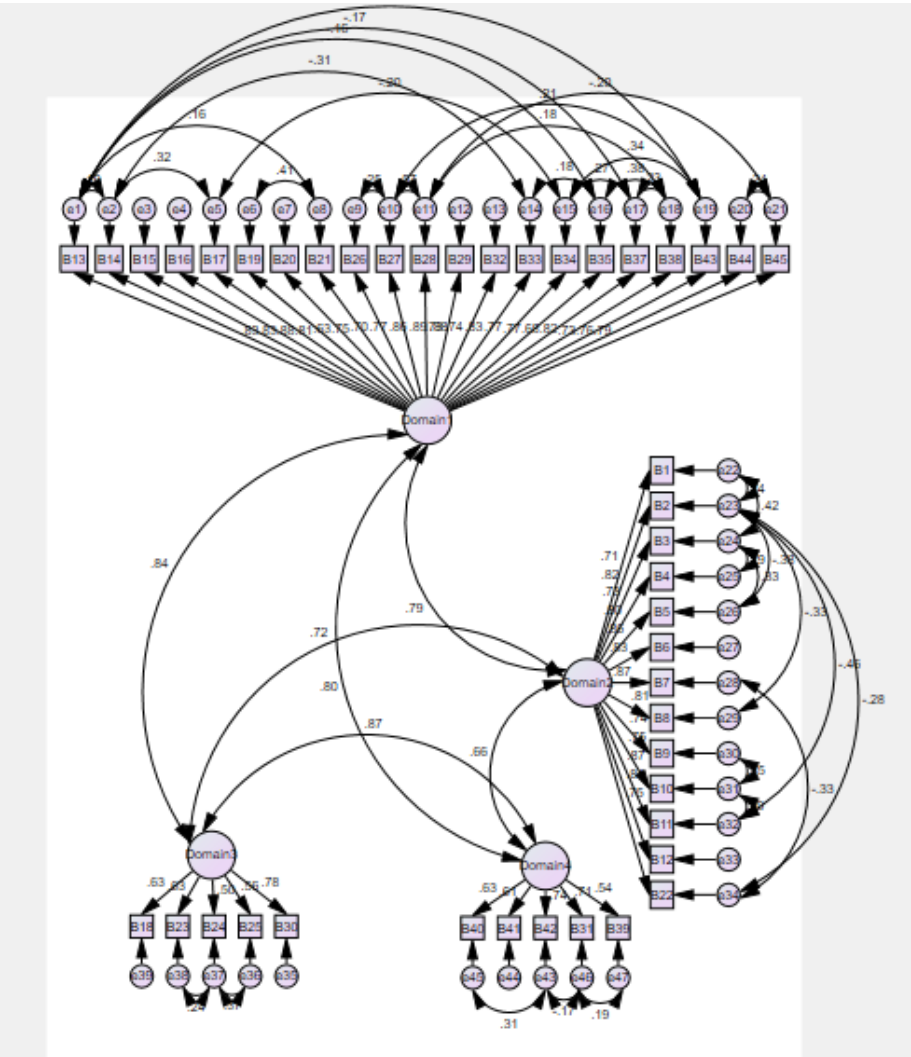

Figure 1. Results of structural equation model analysis for SCNS-P&C-M

Notes: Domain 1: Psychosocial and Emotional needs, Domain 2: Daily Living needs, Domain 3: Health System and Information needs, Domain 4: Personal and Financial needs

The identification of unmet needs supports robust evidence linking caregiver distress to both poor caregiver and patient outcomes, reinforcing calls for systematic integration of caregiver support within clinical practice. Addressing these needs is crucial, not only to reduce psychological morbidity among caregivers but also to promote resilience, personal growth, and strengthened familial relationships which might benefits highlighted in both this and prior research (Genter *et al.*, 2021; Sangruangake *et al.*, 2022; Opsomer *et al.*, 2023).

Moreover, cultural considerations, such as communal values, stigma surrounding emotional distress, and family-based decision-making, must be considered when implementing caregiving support strategies in Malaysia, as emphasised by the differences observed between versions adapted in various countries.

Despite its strengths, the study does have limitations. The use of convenience sampling and a cross-sectional design may limit generalisability, and self-report methods may introduce bias. Future research should incorporate longitudinal designs and diverse recruitment strategies to further validate the SCNS-P&C-M and monitor changes in caregiver needs over time. In addition, intervention studies are needed to evaluate how addressing unmet needs impacts caregiver and patient outcomes in Malaysian settings (Morgado *et al.*, 2017).

In summary, the SCNS-P&C-M provides Malaysian healthcare providers and researchers with a reliable and valid tool to systematically assess and address the multifaceted supportive care needs of partners and caregivers of cancer patients. Its use holds promise for guiding patient and family-centred interventions that can reduce caregiver burden, improve well-being, and ultimately enhance the overall quality of cancer care.

V. CONCLUSION AND FUTURE RECOMMENDATION

The study findings indicate that SCNS-P&C-M is a culturally relevant and psychometrically sound tool for assessing and addressing the multidimensional needs of Malay-speaking caregivers of cancer patients. The Malay version of the survey demonstrated strong psychometric properties, including excellent content validity, a stable factor structure, and high internal consistency. This suggests the ability of the instrument to effectively capture the unmet supportive care needs of caregivers, particularly in all domains such as psychological, practical, informational, and emotional support needs. Although there were some ceiling effects, the reliability and construct validity of the instrument were adequate to support its use in psychosocial oncology care. Notably, support needs of caregivers indicated a significant variation based on the employment status, highlighting the importance of tailored interventions to address socioeconomic disparities, particularly in Malaysia. The future outlook for SCNS-P&C-M is very promising. The tool can be embedded into the caregiver needs assessment in the national cancer care framework. Such integration will make cancer care more family-centric and holistic, acknowledging that treating the patient involves supporting the caregiver as well. Other Malay-speaking regions can similarly benefit by adopting this tool, contributing to a more compassionate and comprehensive cancer support system across different countries. Ultimately, widespread use of SCNS-P&C-M can guide interventions to meet caregivers' unmet needs and help maintain or even improve the quality of life for both patients and their caregivers. This aligns perfectly with the vision of holistic cancer treatment by not just treating the disease, but caring for the patient's entire support network for better overall outcomes.

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