



UCD School of Nursing,
Midwifery and Health Systems



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RESEARCH DEGREE PROGRAMMES

Instruments to measuring post-intensive care syndrome (PICS) : a scoping review

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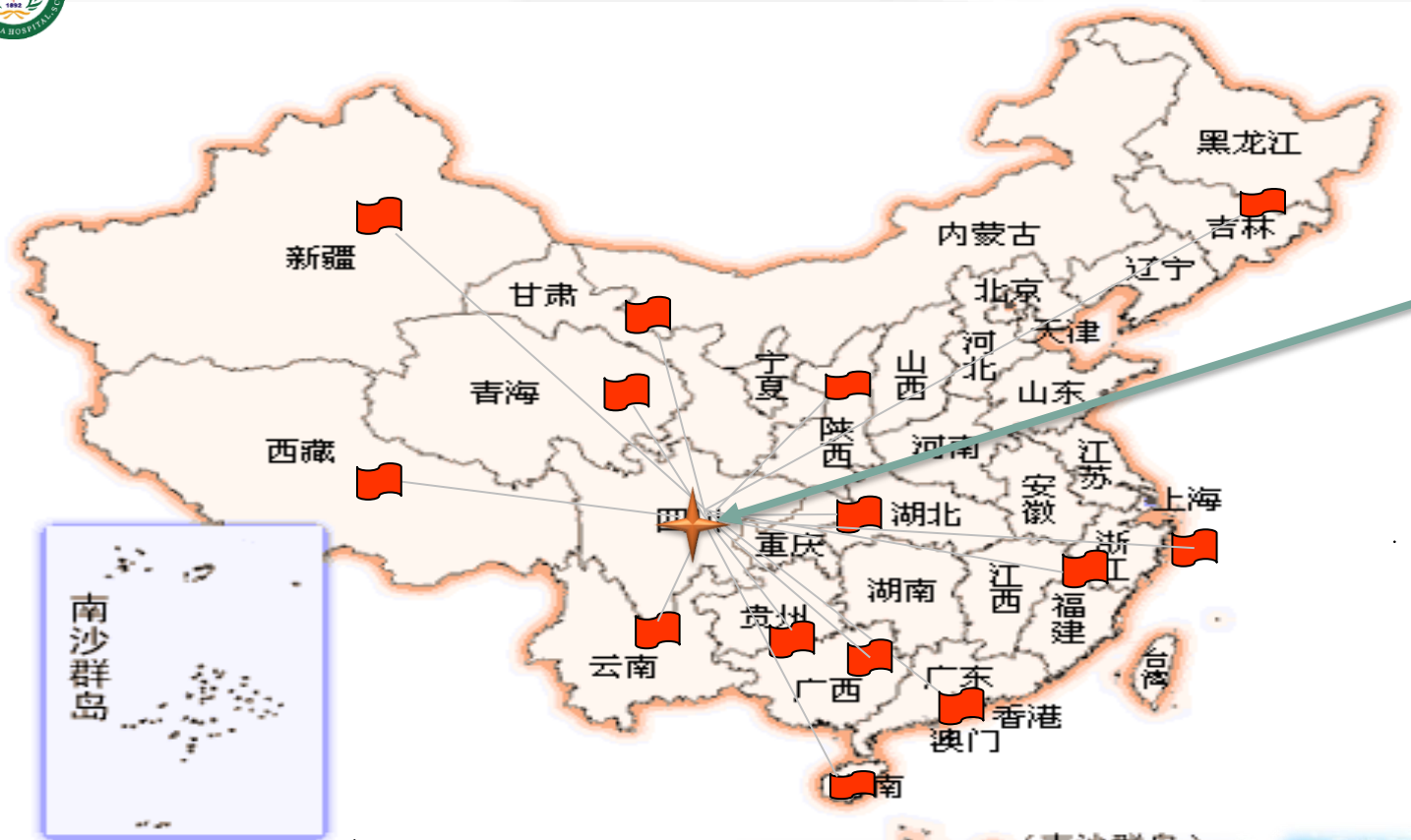
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01

Background



(南沙群岛)

Intensive Care Units (ICU)



ICU is a specialist hospital facility that provides treatment and monitoring for people who are seriously ill and in need of both life-supporting interventions and intensive monitoring by nurses.

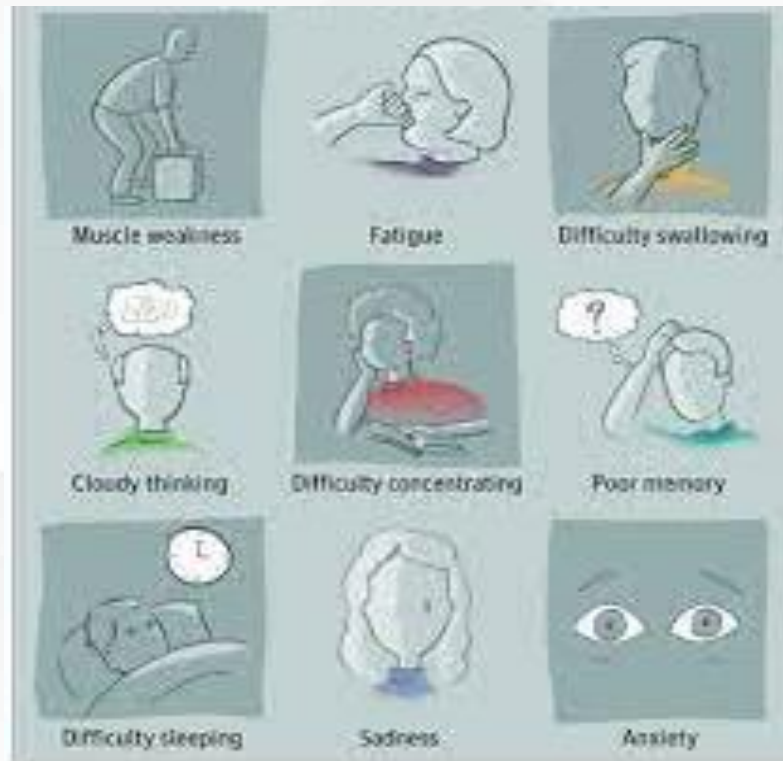
Science and technology advance, survival rates of ICU patients have increased dramatically in recent years

In ICU

Post Intensive Care Syndrome

Successful ICU discharge is a positive development for patients who in the past might not have otherwise survived their condition or treatment. However, the period following ICU also heralds the commencement of the recovery trajectory.

In response to this clinical need, and gap within the research literature (Chu et al, 2021, 2022,2023), I aim to explore any instruments are available to screen these symptoms.



After ICU



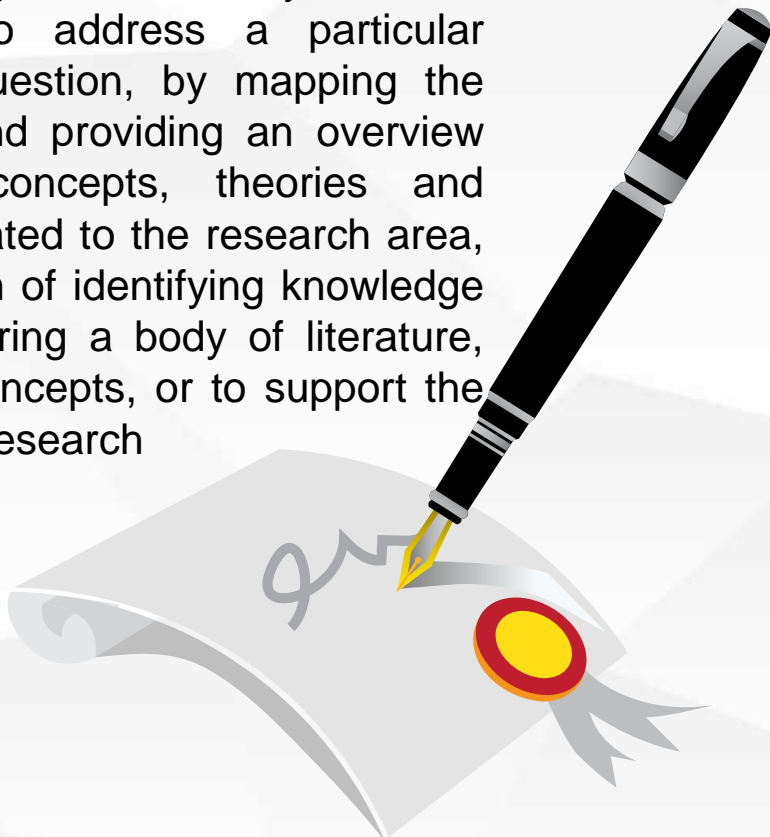
02

Methods



Methodology

A scoping review synthesizes evidence to address a particular research question, by mapping the literature and providing an overview of main concepts, theories and sources related to the research area, with the aim of identifying knowledge gaps, exploring a body of literature, clarifying concepts, or to support the conduct of research



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LITERATURE REVIEW

BACN Nursing in Critical Care | WILEY

Instruments to measure post-intensive care syndrome: A scoping review

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Abstract

Background: There is an increased interest in the evaluation of post-intensive care syndrome among adult patients who survive critical illness. However, there is little consensus regarding measurement instruments in clinical practice.

Objectives: To investigate the characteristics of existing instruments used to measure this syndrome in adults.

Design and Methods: A scoping review following the Arksey and O'Malley framework and Joanna Briggs Institute guideline was conducted. Studies published between 2010 and 2021 were identified in Medline via EBSCO, CINAHL complete, EMBASE, Web of Science, AMED, and PsycINFO databases, along with grey literature were included. The search retrieved 4134 references; eligible studies were independently identified, extracted, and appraised using the Crowe Critical Appraisal Tool.

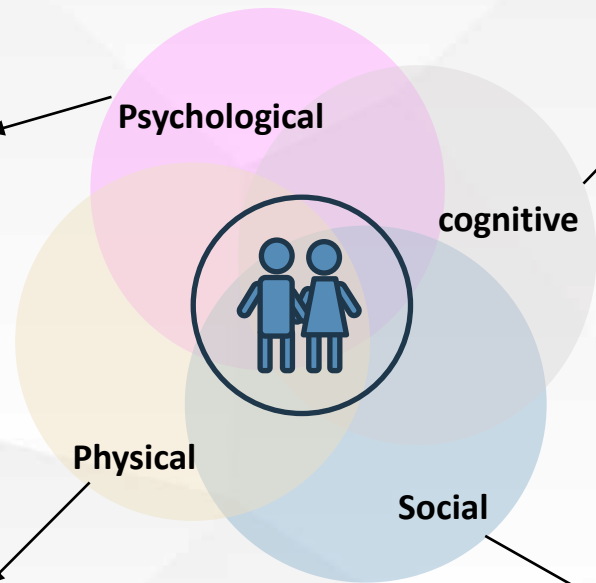
Results: Out of 4134 articles, 18 research articles underwent data extraction and analysis. Forty-one instruments were identified. Most studies ($n = 14$) employed two or more instruments, generating single domain-specific instruments that measured functioning within the physical ($n = 10$), cognitive ($n = 7$), psychological ($n = 12$), or social ($n = 3$) domains. Three studies detected post-intensive care syndrome (without reference to the social domain) using a single assessment tool. Instruments used to measure psychological disorders were relatively consistent within studies, with little attention being paid to the social domain.

Conclusion: While post-intensive care syndrome is recognized as a growing phenomenon among patients globally, and international practice recommendations suggest a range of instruments to measure it, evaluation of this syndrome remains inconsistent. Also, identified instruments did not comprehensively assess this syndrome and lacked data pertaining to their psychometric properties. A psychometrically robust instrument that measures all domains of post-intensive care syndrome in clinical practice is an urgent requirement.

PICS theoretical framework

- Psychological domain:
- anxiety
 - Depression
 - PTSD
 - fear
 - Overwhelmed
 - Boring
 - Irritated
 - Insomnia
 - Nightmare

- Physical domain:
- Exhausted
 - ICUAW
 - Pain
 - Loss of appetite
 - Reduced independence
 - Loss of weight



- Cognitive domain:
- Memory loss
 - Inattention
 - Sensory impairment
 - Executive impairment
 - Dementia
 - Language problems

- Social domain:
- Unstable interrelationship
 - social isolation
 - Unemployment
 - Financial problems
 - Personality and outlook change



Scoping review framework

	Arksey and O'Malley framework (2005, p. 22-23)	*Enhancements proposed by Peters et al (2015, 2017, 2020).
1.	Identifying the research question	Defining and aligning the objective/s and question/s
2.	Identifying relevant studies	Developing and aligning the inclusion criteria with the objective/s and question/s
3.	Study selection	Describing the planned approach to evidence searching, selection, data extraction, and presentation of the evidence.
4.	Charting the data	Searching for the evidence
5.	Collating, summarizing and reporting the results	Selecting the evidence
6.	Consultation (optional)	Extracting the evidence
7.		Analysis of the evidence
8.		Presentation of the results
9.		Summarizing the evidence in relation to the purpose of the review, making conclusions and noting any implications of the findings

Methodology

❖ Step 1: Research objectives

- 1) To investigate instruments available to measure PICS outcomes among adult patients.
- 2) To describe the characteristics of such instruments regarding domains (physical, psychological, cognitive and/or social) measured, mode and timing of administration, duration for completion, and their psychometric properties: validity and reliability.
- 3) To identify research gaps and inform future research studies.

❖ PCC (population/concept/context)

- 1) ICU
- 2) PICS
- 3) Instrument



Methodology

❖ Step 2: Inclusion and exclusion criteria



Table 3 Inclusion and exclusion criteria

	Inclusion criteria	Exclusion criteria
Title and abstract level	<p>Population: Adult patients aged ≥ 18 years of age</p> <p>Context: adult ICU settings, ICU patients discharged to hospital wards, recovery centres, rehabilitation, outpatient, home care, community care or other healthcare settings.</p> <p>Concepts: instruments measure PICS; instruments used to evaluate the frequency or incidence of PICS; studies aimed at developing or validating items for measuring PICS; instruments measure physical, psychological, cognitive, or social domains.</p>	<p>I Language: non-English.</p> <p>I Timeframe: from 2010 to present</p>
Full-text level	<p>Concept: studies included PICS instruments even if no primary data were collected</p>	<p>I No full text available (ie, conference abstract only)</p> <p>I No peer-reviewed published evidence</p> <p>I Not to mention any instruments</p>

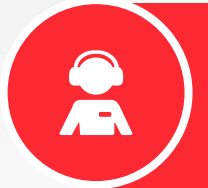
ICU, intensive care unit; PICS, postintensive care syndrome.

Methodology

❖ Step 3: Search strategy

- 1) Peer Review of Electronic Search Strategies (PRESS)
- 2) PICS theoretical framework four domains: 'physical', 'psychological', 'cognitive' and 'social'.

A librarian



Search keywords

MeSH

Search string



Database

Grey literature

Reference lists

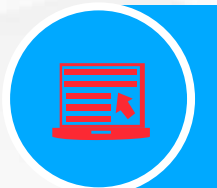


Table 1 Search terms related to the three concepts

Concept	Search terms
ICU	ICU* OR "intensive care*" OR "critical care*" OR CCU* OR "acute care*" OR "recovery room"
PICS	"post-intensive care syndrome*" OR "post intensive care syndrome*" OR PICS "postintensive care syndrome" OR "post ICU syndrome*" OR "post-ICU syndrome*" OR "ICU delirium" OR "ICU-delirium" OR cognition OR neurocognitive OR cognitive OR memory OR "memory disorder" OR "executive function" OR attention OR language OR "physical health" OR mobility OR weakness OR "muscular weakness" OR "ICU-acquired weak*" OR "ICU acquired weak*" OR "post-ICU depression*" OR "post ICU depression*" OR "post-ICU anxiety" OR "post ICU anxiety" OR PTSD OR "post-traumatic stress disorder" OR "psychological health" OR "psychological disorder" OR "social health" OR "social participation"; "social relationships" OR "post-ICU consequence*" OR "post ICU consequence*" OR "post ICU outcome*" OR "post-ICU outcome*" OR "post ICU symptom*" OR "post-ICU symptom"
Instrument	test OR tests OR scale* OR instrument* OR tool* OR measur* OR Question* OR Survey* OR Assess* OR Index OR Indices OR diagnos*

ICU, intensive care unit; PICS, postintensive care syndrome.



Methodology---Search and sources

Table 2 Search results in Medline via EBSCO

#	Query	Results
S8	S3 AND S4 AND S7	2579
S7	S5 OR S6	9987735
S6	TI test OR tests OR scale* OR instrument* OR tool* OR measur* OR Question* OR Survey* OR Assess* OR Index OR Indices OR diagnos*	1935343
S5	AB test OR tests OR scale* OR instrument* OR tool* OR measur* OR Question* OR Survey* OR Assess* OR Index OR Indices OR diagnos*	9267844
S4	"post-intensive care syndrome*" OR "post intensive care syndrome*" OR PICS "postintensive care syndrome" OR "post ICU syndrome*" OR "post-ICU syndrome*" OR "ICU delirium" OR "ICU-delirium" OR cognition OR neurocognitive OR cognitive OR memory OR "memory disorder" OR "executive function" OR attention OR language OR "physical health" OR mobility OR weakness OR "muscular weakness" OR "ICU-acquired weak*" OR "ICU acquired weak*" OR "post-ICU depression*" OR "post ICU depression*" OR "post-ICU anxiety" OR "post ICU anxiety" OR ptsd OR "post-traumatic stress disorder" OR "psychological health" OR "psychological disorder" OR "social health" OR "social participation"; "social relationships" OR "post-ICU consequence*" OR "post ICU consequence*" OR "post ICU outcome*" OR "post-ICU outcome*" OR "post ICU symptom*" OR "post-ICU symptom"	15,4631
S3	S1 OR S2	435325
S2	ICU* OR "intensive care*" OR "critical care*" OR CCU* OR "acute care*" OR "recovery room"	431659
S1	(MH "Intensive Care Units+") OR (MH "Respiratory Care Units") OR (MH "Coronary Care Units") OR (MH "Critical Care+") OR (MH "Critical Care Nursing") OR (MH "Recovery Room") OR (MH "Burn Units")	131777



Endnote library setting duplication

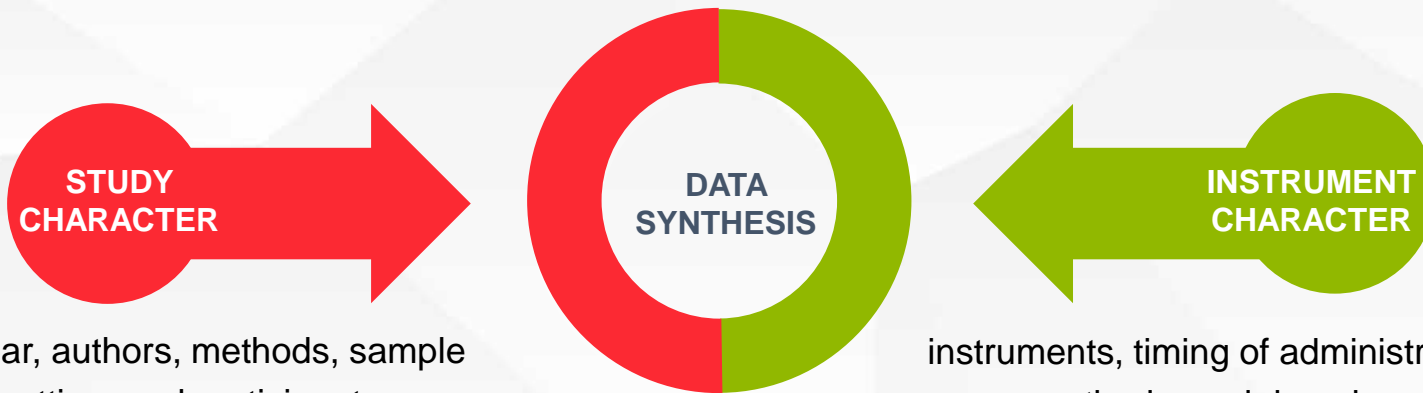


Covidence---screening & quality assessment



Export PRISMA

Methodology---Extraction



country, year, authors, methods, sample size, setting, and participants

instruments, timing of administration, collection methods, and domains measured

Authors, year, country [↵]	Design [↵]	Aim [↵]	Sample size (n), Setting [↵]	Inclusion/Exclusion [↵]	Instruments [↵]	PICS domains [↵]
Wang et al. [↵] 2019 [↵] USA [↵]	Cross-sectional survey [↵]	Validation of the HABC-MR [↵]	N=261 [↵] Critical Care Recovery Center: the first Recovery Clinic in US [↵]	Inclusion criteria: 18yr [↵] ; ICU mechanically ventilated or had been delirious ≥ 2 days; had a follow-up recommendation; Mini-Mental State Examination (MMSE) ≥ 17 [↵] Exclusion criteria: [↵] Receive hospice or palliative care; did not complete HABC-MSR or neuropsychological testing [↵]	HABC-MR, [↵] CERAD-NB or RBANS; GDS-30 or PHQ-9; PTSS-10; GAD-7/PSMS and IADL [↵]	Physical [↵] IADLs and ADLs [↵] Psychological [↵] anxiety, depression [↵] PTSD [↵] Cognition [↵] memory, orientation, judgment [↵]
Jeong and Kang [↵] 2019 [↵] Korea [↵]	Cross-sectional survey [↵]	Development & validation of PICSQ [↵]	N=536, [↵] medical, surgical, neurological, cardiac, mixed ICUs in seven health care facilities [↵]	Inclusion criteria: [↵] 18yr [↵] ; ICU stay ≥ 2 days; discharge from ICU four weeks to one year; being able to communicate. [↵]	PICSQ [↵] SF-36 and Japan frailty scale [↵]	Physical [↵] functional decrease, daily activity limitation and symptom experience [↵] Psychological [↵] Anxiety, depression, and PTSD [↵] Cognition [↵] Memory [↵]

Reference [↵]	Name of the instrument [↵]	Administration method [↵]	Administration timing [↵]	Time to complete [↵]
Marra et al. ^{38,↵} 2018 [↵]	1. RBANS [↵] 2. the Katz ADL [↵] 3. BDI-II [↵]	Face-face by blinded personnel [↵]	At 3 and 12 months after discharge [↵]	Around 60 minutes [↵]
Geense et al. ^{39,↵} 2017 [↵]	1. CFS [↵] 2. CFQ-14 [↵] 3. HADS; [↵] 4. A novel social question [↵] 5. SF-36 [↵] 6. EQ-5D-5L [↵] 7. IES-R [↵]	Postal or online self-reported questionnaire [↵] relatives involved [↵]	At ICU admission, At hospital discharge, [↵] At 3, 12, 24, 36, 48, 60 months after discharge [↵]	More than 30 minutes [↵]
Robinson et al. ^{40,↵} 2018 [↵]	1. the BI [↵] 2. HADS [↵] 3. IES-6 [↵] 4. tMoCA [↵] 5. SF-12v2 [↵] 6. IPAQ [↵]	Structured telephone interviews [↵] relatives involved [↵]	At 3, 6 and 12 months after discharge [↵]	More than 30 minutes [↵]
Heydon et al. ^{41,↵} 2019 [↵]	1. FAQ [↵] 2. EQ-5D-5L [↵] 3. A novel social questionnaire [↵]	mail, email, or phone [↵] self-completed [↵] relatives involved [↵]	At 1 and 3 months after discharge [↵]	15minutes [↵]
Milton et al. ^{42,↵} 2018 [↵]	1. HADS [↵] 2. PTSS-14 [↵] 3. RAND-36 [↵]	Postal mail, self-completed [↵]	At 3 months after discharge [↵]	15minutes [↵]
Farley et al. ^{43,↵} 2016 [↵]	1. HADS [↵] 2. EQ-5D [↵]	Telephone interview [↵] self-reported [↵]	14-25 months after discharge (average 19.5 months) [↵]	10 minutes [↵]



03

Results



Results

- Out of 4134 articles, forty-one instruments were identified
- Most studies (n=14) employed two or more instruments, generating single domain-specific instruments that measured functioning within the physical, cognitive, psychological, or social domains.
- Three studies detected post-intensive care syndrome (without reference to the social domain) using a single assessment tool.
- Instruments used to measure psychological disorders were relatively consistent within studies, with little attention being paid to the social domain

Results



Physical scale: 10



Psychological scale: 12



Cognitive scale: 8

A set of
outcomes
measure



social scale:3

Single
instrument



1. Healthy Aging Brain Care Monitor Self-report
2. Post-Intensive Care Syndrome Questionnaire
3. Home Health Outcome and the Assessment Information Set

Results

At 3 months

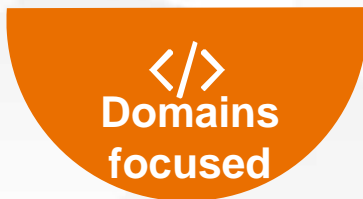
At 6 months

At 12 months

Post
interview
telephone
face to face



Concept of PICS



A problem exists as no
one includes all domains.



04

Conclusion



Conclusion

- The domains of PICS have an inter-connected relationship and a high probability of co-occurrence.
- Severity in one domain (for example, cognitive) might negatively affect others (for example, physical and social). Thus, there is a potential to underestimate the severity of PICS and/or miss symptoms using a singular domain focus.
- Advancing nursing practice requires nurses to understand the trajectory of ICU patient care.
- The importance of continuity of care for ICU survivors, and of them, the screening of PICS comes at the foremost.



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