An-Najah National University

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PSYCHOMETRIC PROPERTIES AND FACTORIAL STRUCTURE OF WHO DISABILITY ASSESSMENT SCHEDULE ON ARABIC CONTEXT

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Dedication

I dedicate that research to my mother and father who always supported me on every way they could and gave me their attention and trust even on most difficult circumstances.

Acknowledgements

I would like to thank my supervisor, who did not hesitate to provide advice and guidance, I also extend my gratitude to my university for embracing me and enabling me to pursue knowledge,

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

PSYCHOMETRIC PROPERTIES AND FACTORIAL STRUCTURE OF WHO DISABILITY ASSESSMENT SCHEDULE ON ARABIC CONTEXT

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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PSYCHOMETRIC PROPERTIES AND FACTORIAL STRUCTURE OF WHO DISABILITY ASSESSMENT SCHEDULE ON ARABIC CONTEXT

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Abstract

This study aims to identify psychometric properties and factorial structure of WHO Disability Assessment Schedule (WHODAS 2.0) within Arabic context, quantitative, cross-sectional, and descriptive research design was adopted to achieve study's objectives, researcher employed convenient random sampling technique, involving 456 adult participants representing various genders and residential locations.

Exploratory Factor Analysis (EFA) of WHODAS 2.0 revealed four distinct factors that reflect different dimensions of functioning and disability, Factor 1 includes items related to mobility, cognitive functioning, and social or domestic activities, with moderate to high loadings indicating strong associations with these domains, Factor 2 comprises items addressing social interaction, adaptation, and cognitive functioning, displaying moderate loadings that suggest specific interrelations, Factor 3 is characterized by single item with very high loading, indicating strong relationship that warrants further investigation, Factor 4 consists of items with moderate loadings, potentially linked to cognitive or mobility-related aspects of functioning.

These identified factors offer structured framework for interpreting underlying dimensions assessed by WHODAS 2.0, thereby supporting its use on clinical and research settings focused on understanding and addressing various aspects of functioning and disability.

Keywords: WHODAS 2.0, Psychometric Properties, Factorial Structure, Arabic Context, Exploratory Factor Analysis (EFA)

Chapter One

Introduction

1.1 Introduction

This chapter aims to present comprehensive theoretical framework on subject of disability assessment and tools used to measure it, with focus on WHODAS 2.0 scale developed by World Health Organization, that chapter forms foundation for understanding scientific context within which current study falls, which aims to standardize and analyze psychometric properties of WHODAS 2.0 scale on Arab context, particularly among Palestinian community on Israel.

Chapter begins by defining disability as conditi on affects individual's physical, psychological, or behavioral abilities, noting wide diversity on its causes and types, highlighting importance of adopting accurate definitions that take that diversity in account, that is followed by review of importance of classifying disabilities, as classification contributes to better understanding of individuals' needs and guides more effective provision of rehabilitation and social services.

Chapter also discusses role of key entities, such World Health Organization, governmental bodies, and academic institutions, on developing definitions and classifications of disability in global and local levels, close relationship between disability classification and assessment is highlighted, Classification provides theoretical framework upon which various measurement tools are based, while assessment provides accurate data that determines individuals' needs and level of functioning.

Chapter also reviews theoretical models for understanding disability, starting with traditional medical model, moving on to social model, and finally integrative model that combines health, social, and personal factors, that is embodied on International Classification of Functioning and Disability (ICF), which World Health Organization relies on and formed basis for development of WHODAS 2.0 scale.

Regarding disability assessment tools, chapter reviews most important traditional scales, such Functional Dependence Measure (FIM), Barthel Index, and Katz Scale, It highlights characteristics of WHODAS 2.0 scale, which is characterized by its

comprehensiveness, multidimensionality, and ability to assess functioning across various life domains on way that takes in account health, social, and psychological dimensions.

Chapter concludes by discussing urgent need for disability assessment tools that are appropriate for Arab context, where clear gap is evident on lack of standardized tools that are translated culturally and linguistically, Given that previous studies have demonstrated success of WHODAS 2.0 on multiple cultural settings, assessing its psychometric properties on Arab context is essential step to ensure accuracy of assessment and serve efforts to achieve social inclusion and justice for persons with disabilities on Palestinian and broader Arab society.

By providing that theoretical background, that chapter seeks to build scientific foundation necessary to support study's objectives of testing validity and reliability of WHODAS 2.0 scale on Arab context, on line with international standards while simultaneously responding to specificities of social, political, and cultural context on which study participants live.

1.2 Theoretical background

Disability is conditi on limits or affects individual's physical, mental, or behavioral abilities, It impacts their capacity to perform daily activities on typical manner, Disabilities appear on various forms and have diverse causes, including motor, hearing, visual, mental, social, and physical impairments, Disability is part of human diversity, and global efforts continue to support individuals with special needs to ensure their full participation on society, These efforts include protective legislation, rehabilitation programs, and creation of accessible environments (Martin Ginis et al., 2021; Halvorsen et al., 2022).

Classification of disabilities is based on several criteria and methodologies that aim to provide accurate and comprehensive understanding of each case, Classifications differ by medical, functional, age-based, or severity-based approaches, on medical classification, individuals are grouped according to challenges they face on physical, mental, auditory, or visual functioning, For example, physical disabilities may involve mobility limitations, while auditory and visual disabilities relate to impairments on hearing and sight, Intellectual disabilities also fall within that framework, involving

challenges on cognitive functions and conceptual understanding (Martin Ginis et al., 2021).

Severity and type of disability can have substantial impact on individual's daily life, Severe disabilities often hinder independence, while mild disabilities may present fewer challenges, Classification systems help determine individual needs and guide provision of appropriate support services, These include rehabilitation programs, social services, and community-based participation initiatives (Chakraborty, 2020).

Collecting data about disability is essential because it indicates how well individuals can function on different aspects of public life, Unlike traditional health metrics such mortality or morbidity rates, disability has become central on measuring disease burden and evaluating success of health interventions, Nonetheless, accurately identifying and measuring disability remains challenging (Ustun et al., 2010).

World Health Organization (WHO) addresses that need through International Classification of Functioning, Disability, and Health (ICF), All standardized tools used to measure disability and health should align with ICF to allow for global comparisons, To improve measurement of health status and build on earlier tools, WHO developed WHODAS 2.0, that version assesses performance and disability across key life domains, It addresses limitations caused by illnesses, injuries, chronic health problems, mental or emotional conditions, and substance use disorders (DSM-5, 2013; Ustun et al., 2010).

WHO recognizes WHODAS 2.0 as valuable instrument for evaluating functioning and disability on general population, It is also used to assess effectiveness of interventions, that study focuses specifically on psychometric properties and factorial structure of WHODAS 2.0 when applied to sample of Arab adults (Ustun et al., 2010).

Several assessment tools have been developed to evaluate functioning and disability across domains, Functional Independence Measure (FIM) assesses how independently individuals can perform activities of daily living (ADLs) and instrumental activities of daily living (IADLs), Barthel Index and Katz Index also focus on basic ADLs, Lawton IADL Scale assesses more complex tasks required for independent living, These tools

help determine individuals' ability to manage daily responsibilities and their level of dependence on others (Halvorsen et al., 2022).

Health-related quality of life is another vital dimension evaluated using instruments like EQ-5D and SF-36 Health Survey, These tools measure multiple domains, including physical functioning, mental health, and social participation, Additionally, Activities-specific Balance Confidence (ABC) Scale assesses individuals' confidence on performing tasks involving balance without fear of falling, Each tool contributes critical insights for clinicians, researchers, and policymakers to better understand needs and develop effective interventions (Halvorsen et al., 2022).

1.2.1 Definition of disability

Term "disabled person" refers to individual who faces challenges or difficulties on performing daily activities due to limitations on physical, mental, or behavioral abilities, extent and type of disability vary from person to person, and cause of disability may be congenital or result from accident or illness (Halvorsen et al., 2022).

It is important to emphasize that disability does not entirely define person; rather, it is just one aspect of their identity or condition, Individuals with disabilities can be active members of society and contribute on diverse ways, Numerous programs and services are available to support people with disabilities, empowering them to fully participate on society and achieve their full potential.

People with disabilities share many characteristics and abilities with others; however, there are differences that may distinguish them, often related to challenges they face due to their disability, These differences may include physical, sensory, cognitive, or emotional limitations that influence how they interact with their environment, Recognizing these differences is essential to fostering inclusion and designing responsive systems of support that address their specific needs while respecting their dignity and individuality.

1. *Physical or Mobility Challenges:* Persons with disability may experience one of characteristic features which is inability, to move freely or perform day-to-day activities without being assisted, For example, when it comes to mobility, people

with disability will require use of assistive technology or other person to help them move.(Song & Lee, 2018).

2. *Cognitive or Functional Challenges:* People with disabilities may face challenges on thinking or understanding concepts similar to others, However, there may be differences on speed or method of absorbing information or executing tasks (Ćwirlej-Sozańska et al., 2020).

3. *Social Challenges:* person with disability will have trouble interacting or even assimilating to society due to special need, that may happen if members of society discriminate, or are stigmatized against, idea of disability as whole (Midhage et al., 2021; Song & Lee, 2018).

Despite these differences, it is important to emphasize that people with disabilities share many abilities and talents with others, and they can achieve success and excellence on various areas of life when provided with appropriate support and opportunities (Song & Lee, 2018).

1.2.2 Importance of classification of disability

understanding disability plays crucial role on problem-solving related to it, Here are some ways understanding disability can aid on problem-solving such Increasing Awareness and Understanding: Understanding disability helps build awareness and comprehension of challenges faced by individuals with disabilities, that can lead to changing negative attitudes and positions towards disability, fostering solidarity, and understanding on society (J, M, Song & Lee, 2018).

Policy and Program Development: Understanding disability can assist on developing policies and programs that better meet needs of individuals with disabilities, By including voices of people with disabilities on decision-making and policy development processes, problems can be identified, and solutions can be developed more effectively (Midhage et al., 2021).

Enhancing Support and Services: Understanding disability can guide provision of support and services more effectively to individuals with disabilities, By assessing their needs and understanding impact of disability on their lives, appropriate services and

support can be provided to help them achieve their full potential and improve their quality of life (Ćwirlej-Sozańska et al., 2020).

In summary, understanding disability not only helps identify problems but also opens door to more effective and inclusive solutions to improve lives of people with disabilities and enhance societal inclusiveness (Ćwirlej-Sozańska et al., 2020).

Figure 1

Conceptual framework of disability

Note:, (Ćwirlej-Sozańska et al., 2020)

1.2.3 Role of Key Entities on Defining Disability

Key entities collaborate and intersect on various ways to shape definitions, classifications, policies, and practices related to disability, Their collective efforts are essential for promoting inclusion, equity, and empowerment for people with disabilities worldwide, Key entities involved on defining disability such *World Health Organization (WHO)* which plays central role on developing global standards and frameworks for understanding disability, It has created influential models such International Classification of Functioning, Disability, and Health (ICF), which provide comprehensive definitions and classifications of disability (Midhage et al., 2021; Midhage et al., 2021).

Governmental Bodies: Government agencies responsible for health, social welfare, and disability services play key role on defining disability through policy development,

legislation, and program implementation, They frequently collaborate with other stakeholders to establish definitions and standards for disability within their jurisdictions (Ćwirlej-Sozańska et al., 2020).

Academic and Research Institutions: Universities and research organizations conduct studies and produce scholarly work to advance understanding of disability, They contribute to defining disability through theoretical frameworks, empirical research, and evidence-based assessments of disability and its impacts.

Non-Governmental Organizations (NGOs): Disability-focused NGOs and advocacy groups play critical role on defining disability by raising awareness, promoting rights-based approaches, and advocating for inclusive policies and practices, They offer expertise, resources, and support to individuals with disabilities and their families (Midhage et al., 2021).

International Disability Rights Organizations: International organizations, such United Nations (UN) and its agencies, as well as regional bodies, develop conventions, guidelines, and recommendations to protect rights of people with disabilities, They work to ensure that disability is recognized as human rights issue and advocate for inclusive development agendas (J, M, Song & Lee, 2018).

Professional Associations: Associations representing healthcare professionals, social workers, therapists, and other relevant disciplines contribute to defining disability by developing standards of practice, guidelines, and codes of ethics, They promote evidence-based approaches to assessment, treatment, and support for individuals with disabilities (Midhage et al., 2021).

Community-Based Organizations: Grassroots organizations and community-based initiatives play vital role on defining disability within local contexts, They provide services, support networks, and advocacy efforts tailored to needs of specific communities and populations.

These principal constructs interact on diverse manners that yield definitions, classifications, policies and practices through which disability is shaped, Together they have potential to support inclusion, equity and empowerment of persons with disabilities globally.

1.2.4 Relationship between classification and assessment of disability

Because relationship between classification and assessment of disability is complexly intertwined on understanding of one requires other.

Classification of Disability: that is process of grouping people with disabilities in categories or groups based on some specific criterion or characteristic, These could be type of disability, severity, functional limitation, or any other relevant one, It enables classification to provide framework wherein information about disabilities can be organized on structured way, patterns or commonalities highlighted, and interventions or support services tailored, For example, persons can be classified depending on nature of impairment—whether physical, sensory, or cognitive on nature; extent of their limitation; or age of onset, This, on turn, helps identification of common language and terminology with which to discuss disability, and it communicates to professionals, policymakers, and service providers.

Assessment of Disability: approach on assessment covers individual's impairments, including functional limitations and participation restrictions, to understand different needs, strengths, and challenges individual may confront regarding his or her disability, It is personal issue and dynamic on nature and may use various methods during process, including clinic evaluations, standardized tests, observations, self-report measures, and caregiver and/or family input.

Assessment is process aimed in gathering comprehensive information on individual's abilities, limitations, environmental factors, and personal goals on order to support decision-making and intervention planning, that enables identification of specific areas of need, setting of realistic goals, monitoring of progress over time, and tailoring of interventions or accommodations so that individual's needs are effectively met (Ćwirlej-Sozańska et al., 2020).

Relationship between classification and assessment of disability can be conceptualized on several interrelated ways, First, it is instructive—classification informs assessment process by providing framework for organizing and categorizing information about disabilities, that structure helps guide selection of assessment tools and methods relevant to particular type or category of disability under evaluation, ensuring that assessments are targeted and meaningful, as noted by Midhage et al. on (2021).

Secondly, relationship is iterative, Classification and assessment are not isolated steps but ongoing, dynamic processes that continuously inform and influence each other, As data are gathered and analyzed during assessments, findings may lead to revisions or refinements on classification systems themselves, that back-and-forth process helps to better capture diversity and complexity of disabilities, making both practices more responsive and accurate.

Finally, classification and assessment are complementary, While classification helps establish broader categories or groups, assessment provides individualized insights in person's specific strengths, needs, and functional abilities within those categories, Together, they create fuller picture of individual's experience and condition.

Overall, classification and assessment of disability represent deeply connected processes that contribute to our understanding of disability, They also play critical role on guiding intervention planning and provision of appropriate support services for individuals with disabilities, as emphasized by Betz on 2023.

1.2.5 Models of Disability

Of all classification models of disability, probably most popular and widespread one is ICF, ICF provides overall framework of describing interaction between impairment—a person's health condition—and activity limitation he or she performs, Moreover, it includes restrictions on one's participation on society.

It also takes in account environmental and personal factors that can influence individual's functioning (J, M, Song & Lee, 2018), ICF has come to be widely applied and recognized as international standard for classifying disability and health conditions, that tool offers common language and framework through which health practitioners, researchers, policy developers, and service personnel may describe and assess disability with regard to impact thereof on life of affected persons, Different countries and organizations around world apply ICF to different uses, such assessments and determination of disability, while formulating policies and programs; on measuring outcomes on both health and rehabilitation settings (J, M, Song & Lee, 2018), ICF was introduced by WHO on 2001 to provide standardized and comprehensive view of health and disability, International Classification of Functioning, Disability and Health (ICF) conceptualizes health on holistic manner, emphasizing dynamic interaction between

person’s health condition, their functioning, and various contextual factors, Rather than focusing solely on diagnosis or impairment, ICF seeks to understand how health conditions affect individual’s ability to live and participate on society, that comprehensive model is based on two main components: functioning and disability, and contextual factors (J, M, Song & Lee, 2018).

Functioning and disability involve both body functions and structures, such physiological and anatomical aspects, as well as activities and participation, which refer to tasks individuals carry out and roles they play on society, Health conditions can lead to impairments that may result on activity limitations or participation restrictions, Contextual factors, on other hand, include both environmental and personal dimensions, Environmental elements may encompass physical surroundings, social support systems, and societal attitudes, while personal factors include characteristics such age, gender, coping styles, and personality traits, These contextual variables can either hinder or facilitate individual’s ability to function and participate fully (Akhtar et al., 2021).

ICF provides unified framework and language for describing how people experience health conditions on real life, It is widely used on clinical practice, rehabilitation, research, policy-making, and social services, Beyond classification, ICF supports coding of health information, contributing to international communication and comparison of health data, that approach reflects shift from purely medical model to one that includes psychological, social, and environmental perspectives (Chu & Zhang, 2015; Betz, 2023).

Among its key features, ICF adopts multidimensional and biopsychosocial perspective, recognizing that health outcomes are shaped by interaction between medical conditions and broader life circumstances, It avoids rigid diagnostic categories, opting instead for continuum that captures varying degrees of functioning and disability, that flexibility allows for more nuanced and individualized understanding of health, suitable across different cultural, social, and age contexts (Rosenthal, 2021; Park et al., 2019).

Additionally, ICF organizes aspects of health in domains related to body functions, body structures, activities and participation, and environmental factors, Body functions refer to physiological and mental processes such emotional regulation, cognition, and sensory perception, Body structures cover anatomical elements like limbs and organs,

Activities and participation describe how individuals perform daily tasks and engage on social and community life, including employment, communication, and self-care, Environmental factors highlight external influences—both supportive and obstructive—that impact individual's capacity to function, such assistive devices, accessibility, and societal attitudes (Akhtar et al., 2021).

Within these broad domains, ICF does not focus on specific types of disabilities per se but describes consequences or effects of health conditions with respect to individuals' functions and participation on various parts of life, that noncategorical approach enables more holistic approach and individualized understanding of disability, taking in consideration diverse limitations and barriers that various people may experience differently in different levels, (Halvorsen et al., 2022).

ICF thus fosters far more holistic and integrative approach toward health and impairment on facilitating active ability on individual persons and, by extension, their proper integration on society.

At highest levels, there is usually very little controversy about categorization on disability-related dimensions because disabilities on ICD are mainly gathered in Chapter VII: Diseases of Nervous System (G00-G99) and Chapter XVIII: Symptoms, signs, and abnormal clinical and laboratory findings, not classifiable to other categories within that classification (R00-R99), Examples of types of disability classifications as reflected on ICD include:

- Intellectual Disabilities: These come under category "Intellectual Disabilities" (F70-F79) on ICD-10, However, on ICD-11, intellectual disabilities come under "Disorders of Intellectual Development" (6A00-6A5Z).
- Hearing Impairments: Hearing impairments are classified under "Hearing loss" (H90-H91) on ICD-10.
- Visual Impairments: Visual impairments are classified under "Visual disturbances and blindness" (H53-H54) on ICD-10.
- Physical Disabilities: ICD does not have specific classifications for physical disabilities, However, conditions that result on physical disabilities may be classified under various chapters depending on underlying cause (e.g., diseases of musculoskeletal system, injuries).

It's important to note that ICD primarily focuses on medical aspects of disabilities and may not fully capture social and environmental dimensions of disability, Additionally, classifications may vary between different versions of ICD, such ICD-10 and newer ICD-11.

Other popular classification models of disability include:

Diagnostic and Statistical Manual of Mental Disorders (DSM): Developed by American Psychiatric Association, DSM provides criteria for diagnosing mental health disorders, including intellectual and developmental disabilities, psychiatric conditions, and neurodevelopmental disorders, Moreover, Social Model of Disability: Although not system of categorization, social model of disability is far-reaching schema that emphasizes barriers on society and discrimination as creators of disability, that complements medical model since, instead of person having to be "fixed," social model addresses idea of removing barriers that create non-participation and including person with impairments on society.

These models are influential on shaping our understanding of disability and inform policy, practice, and research on field, Each model brings unique perspective and insight in complexity of disability and health, contributing to more holistic approaches toward assessment, intervention, and support for individuals with disabilities.

1.2.6 Disability Assessment Tools

World Health Organization Disability Assessment Schedule 2.0 is one of standardized tools put forward by WHO., It provides comprehensive evaluation of individual's level of functioning and disability, considering various aspects of daily life, WHODAS 2.0 evaluates functioning and disability across six domains (Chakraborty, 2020; Guilera et al., 2015; Üstün et al., 2010):

1. Cognition: Assesses cognitive functioning, including understanding and communicating information.
2. Mobility: that assesses person's ability to get around independently and perform activities such walking, using stairs, and traveling.
3. Self-care: Assesses ability of individual with regard to personal hygiene, grooming, and other activities that relate to their state of health and well-being.

4. Getting along: Assesses ability to interact with others, maintain relationships, and participate on social activities.
5. Life activities: Encompasses various aspects of daily living, such household responsibilities, work, school, and leisure activities.
6. Participation: Evaluates engagement on community and societal activities, including social, civic, and recreational involvement.

WHODAS 2.0 uses standardized scoring system to measure level of difficulty experienced on each domain, Responses are rated on scale from no difficulty to extreme difficulty or unable to do, instrument can be administered via self-report or interview, depending on context and individual's abilities.

WHODAS 2.0 is widely used on research, clinical practice, and public health settings to assess disability and health functioning across diverse populations, It provides valuable information for understanding impact of disability, guiding intervention planning, and evaluating effectiveness of programs aimed in improving health and well-being.

Several other scales and assessment tools are used to evaluate functioning and disability, each with its specific focus:

1. WHODAS 2.0: Provides comprehensive assessment of disability and health functioning across multiple domains, including cognition, mobility, self-care, getting along with others, life activities, and participation, It offers broad perspective on disability (Halvorsen et al., 2022).
2. Functional Independence Measure (FIM): Focuses on measuring person's level of independence on performing activities of daily living (ADLs) and instrumental activities of daily living (IADLs), such eating, bathing, toileting, and managing finances, It assesses basic functional abilities related to self-care and daily tasks.
3. Barthel Index: Similar to FIM, that index assesses person's ability to perform basic ADLs, including mobility, feeding, grooming, and using toilet, It provides measure of functional independence on essential self-care tasks.
4. Katz Index of Independence on Activities of Daily Living (ADL): Evaluates person's ability to perform basic ADLs independently, such bathing, dressing, and transferring, It focuses specifically on basic self-care activities.

5. Lawton Instrumental Activities of Daily Living (IADL) Scale: Assesses ability to perform more complex tasks necessary for independent living, such managing medications, handling finances, and using transportation, It evaluates higher-level functional abilities beyond basic self-care tasks.
6. EQ-5D: standardized measure of health-related quality of life that includes questions about mobility, self-care, usual activities, pain/discomfort, and anxiety/depression, It focuses on impact of health conditions on quality of life across specific dimensions, rather than overall functioning and disability.
7. SF-36 Health Survey: Assesses multiple aspects of health-related quality of life, including physical functioning, social functioning, role limitations due to physical or emotional problems, and general mental health, It provides broader assessment of health-related quality of life but does not specifically focus on disability or functioning across various domains.

In summary, while scales like FIM, Barthel Index, Katz Index, Lawton IADL Scale, EQ-5D, and SF-36 Health Survey focus on specific aspects of functional ability or quality of life, WHODAS 2.0 provides comprehensive assessment of disability and health functioning across multiple domains, offering broader perspective on individual's overall level of functioning and disability, Each tool varies on focus, enabling comprehensive evaluation of functional abilities and quality of life on different contexts.

1.2.7 Need for disability assessment tools on Arabic context

Role of Arabic language and communities on assessment tools, such WHODAS 2.0, is crucial for ensuring accessibility, cultural relevance, and effective communication,

WHODAS 2.0: Translating and adapting WHODAS 2.0 in Arabic allows individuals from Arabic-speaking communities to accurately understand and respond to questions, thus addressing linguistic and cultural barriers to effective participation (Park et al., 2019), Ensuring that assessment is culturally relevant promotes inclusivity and effective communication on evaluating disabilities.

1. Translation and Cultural Adaptation

Studies such Song & Lee (2018) have emphasized importance of accurate translation, taking in account linguistic and contextual differences, to maintain validity of disability

assessment tools, on Arabic context, reviews have indicated that superficial translation may distort concepts associated with disability, necessitating rewording of some items to fit cultural and social context (Midhage et al., 2021), Therefore, adapting WHODAS 2.0 requires more than just linguistic translation; it also requires careful cultural adjustment to ensure its suitability for Arabic context.

2. Validation

Studies such Ćwirlej-Sozańska et al, (2020) have demonstrated that verifying psychometric properties of any instrument after translation is vital step to ensure its reliability and accuracy, Adopting tool like WHODAS 2.0 on Arab context requires internal validity and reliability testing to ensure it truly measures aspects of disability on line with Arab context, validation process is crucial to achieving current study's objectives related to assessing factor structure and internal consistency of scale.

3. Accessibility

World Health Organization (Üstün et al., 2010) emphasized that providing assessment tools on alternative formats, such Braille or audio versions, contributes to achieving equitable access for people with various disabilities, on light of challenges facing Arab societies, importance of developing accessible versions of WHODAS 2.0 scale emerges, that ensures access to assessment for all groups, including those with visual or motor disabilities, thus promoting principle of inclusivity on measurement processes.

4. Training and Education

Study (Al-Marri, 2020) showed that successful use of assessment tools depends primarily on training health workers on how to administer tool and interpret its results scientifically, that requires providing intensive training programs that cover how to apply WHODAS 2.0 on Arab context, while educating participants about importance of assessment to ensure valid and reliable data.

5. Ethical Considerations

Literature, such study by Midhage et al, (2021), has highlighted importance of adhering to ethical standards when applying assessment tools, particularly with regard to confidentiality and obtaining informed consent from participants, on Arab context, which may be characterized by social sensitivity towards disability issues, respecting

participants' privacy and protecting their data during application of WHODAS 2.0 is even more important.

6. Standardization

Cross-cultural comparative studies, such Ćwirlej-Sozańska et al, (2020), have shown that standardizing procedures for applying tool and recording responses contributes to increasing reliability and accuracy of results, Therefore, applying WHODAS 2.0 on Arab context requires standardizing application and scoring processes to ensure comparable results and achieving highest levels of validity and reliability of assessment.

1.2.8 Challenges on Disability Assessment and Recent Developments on Measurement Tools

1.2.8.1 Traditional Challenges on Disability Assessment

Since their inception, disability assessment efforts have faced numerous challenges related to absence of standardized tools and lack of clarity on definitions and criteria used across various agencies and institutions, study by Al-Dhiyab and Al-Quraini (2018) also pointed to practical obstacles, including lack of practical experience, absence of supporting specialties, and overlapping roles among members of diagnostic teams, that study confirmed that traditional diagnosis often lacked consistency and reliability, negatively impacting quality of services provided to persons with disabilities.

Furthermore, study by Al-Masalaha et al. (2019) demonstrated that disability assessment without accurate and standardized tools led to clear failure to monitor actual extent of disability and needs of different groups, which widened gap between needs and services provided, results of that study indicated that policies based on weak assessment data contribute to exacerbating problems of social integration for persons with disabilities.

1.2.8.2 Recent Developments on Disability Assessment

In response to these challenges, scientific and research institutions have begun to develop assessment tools that are more accurate and responsive to social and legal realities of persons with disabilities, Al-Kanuni (2023) also highlighted, on his study on disability assessment on Morocco, importance of adopting modern assessment systems

based on human rights standards and taking in account social and cultural diversity, rather than relying solely on narrow medical perspective.

Al-Marri (2020) also discussed role of specialized scientific associations on spreading culture of sound assessment and standardizing measurement tools through intensive training and professional programs, These efforts emphasize importance of transitioning from traditional manual tools to standardized electronic tools based on principles of International Classification of Functioning and Disability (ICF).

1.2.8.3 Digital Transformation and Its Impact on Assessment Tools

With digital revolution, there has been urgent need to develop traditional tools and convert them to digital models that contribute to achieving greater accuracy and efficiency on diagnosis, on context, Al-Sharqawi (2023) explained that digitization of diagnostic tools has improved quality of assessment by speeding up processes, enhancing accuracy of results, and attracting attention of examinees, which has contributed to building reliable data to support intervention and treatment programs.

Al-Sharqawi emphasized that digitization represents not only technical shift, but also conceptual one, as it has helped integrate measurement tools in flexible electronic platforms that support real-time interaction and allow data to be stored and compared on standardized manner that is amenable to in-depth statistical analysis.

1.2.8.4 Importance of Adopting Modern Assessment Tools Such WHODAS 2.0

In light of these developments, importance of using internationally recognized scales such WHODAS 2.0 is reinforced, that scale is based on International Classification of Functioning and Disability and is characterized by its flexibility and adaptability to different contexts, Despite success of WHODAS 2.0 on many global settings, scarcity of studies examining its validity on Arab world, as demonstrated by current review, necessitates its cultural and linguistic adaptation to suit social and political specificities of Arabic speakers.

1.3 Problem statement

Percentage of Arabs within Israel is substantial, as they constitute significant minority, However, there is notable lack of studies and surveys focusing on their mental health and disability compared to Arabs on other countries, Assessing overall disability and functioning is crucial for shaping public health priorities and evaluating health interventions, Despite advancements on laws and policies, developing disability assessment system aligned with human rights-based approach of Convention on Rights of Persons with Disabilities remains challenging, that difficulty arises from two main issues: persistence of medical model on defining "disability" among Arab population on Israel and unique social, economic, and governance challenges specific to each country, These include resource constraints and limited technical knowledge of assessment systems, Given that WHODAS 2.0 is multidimensional tool based on International Classification of Functioning, Disability, and Health, current study aims to address following main question:

1.4 Questions of study

From main question, following sub-questions are derived:

1. What are psychometric characteristics of WHODAS-2.0(36i) on Arab context on terms of validity and reliability?
2. Do gender, age and place of residence affect level of disability among Arab adults aged 18 years and over on Arab community?
3. What are normative values of responses to WHODAS-2.0(36i) among Arab adults aged 18 years and over on Arab community across place of residence?
4. To what extent WHODAS-2.0(36i) does meet disability criteria according to DSM-5?
5. What is optimum WHODAS-2.0(36i) cut-off score for Arab adults aged 18 years and over on Arab community?

1.5 Objectives of Study

Current study aimed to discover and test psychometric properties of WHODAS-2.0(36i) on Arab context on terms of construct validity and reliability by assessing factor stability of WHODAS-2.0 (36i):

1. Moreover, it aimed to reveal potential effects of gender, age, and place of residence on level of disability on Arab adults aged 18–65 years on

2. Moreover, that study attempted to establish normative values for responses to WHODAS-2.0(36i) and to discover optimal cut-off score on WHODAS-2.0(36i) among Arab adults aged 18-65 years,
3. Finally, that study evaluated ability of WHODAS-2.0(36i) to meet disability criteria according to DSM-5.

1.6 Statement of importance

This study aims to develop valid and reliable tool for assessing disability on Arab adults, tool is intended to support researchers, psychiatrists, counselors, and psychologists on various areas, including scientific research, diagnosis, and clinical assessment within field of mental health,

Moreover, that study highlights importance for counselors, psychologists, and researchers to ensure psychometric properties of tools used on field of mental health, It also aims to provide them with theoretical knowledge on development and validation of psychological scales,

In addition, that study will determine whether WHODAS-2.0 is appropriate measure for use among Arab adults from diverse backgrounds,

Finally, that study will provide us with normative values for responses to WHODAS-2.0 and set ideal cut-off mark on WHODAS-2.0 among Arab adults aged 18-65, who on turn, psychologists, psychiatrists, and counselors are able to distinguish between normal adults and those with disabilities.

1.7 Limitations of Study

Current study targeted sample of 1,500 respondents, which is relatively above average size for WHODAS-2.0, therefore, generalizability of results to larger population is rather good but generalization of results should be carefully considered.

Moreover, process of collecting data through online survey was due to large sample size and difficulty of accessing many places due to restrictions imposed due to COVID-19, sample for that research is selected only from Arab adults from Palestinian community on Israel.

1.8 Study Concepts

Validation: It is defined as “process by which researchers provide ongoing evidence to establish range of appropriate inferences that can be made from our observed scores to our theoretical expectations (conceptualization) for particular construct, taking in account all potential ethical and social influences” (Disability and Health Overview, 2020).

Disability: disability is any condition of body or mind (impairment) that makes it difficult for person with that condition to perform certain activities (activity restriction) and interact with world around them (participation limitations) (Disability and Health Overview, 2020).

36-item WHODAS 2.0: 36-item WHODAS 2.0 is used to measure general disability and disability on six domains: Do1 Cognition (6 items), Do2 Mobility (5 items), Do3 Self-care (4 items), Do4 Getting along (5 items), Do5 Life activities (8 items), and Do6 Participation (8 items), During interview, response refers to last 30 days, Answers to questions are rated on 5-point scale identifying level of difficulty or problem (1 = none; 2 = mild; 3 = moderate; 4 = severe; 5 = extreme or cannot to do), obtained results are converted on scale from 0 to 100 (Ćwirlej-Sozańska et al., 2020; Ćwirlej-Sozańska et al., 2020; Ćwirlej-Sozańska et al., 2020; Ćwirlej-Sozańska et al., 2020)

1.9 Literature review

Convention on Rights of Persons with Disabilities (2006) defines persons with disabilities as: “Anyone who suffers from long-term physical, mental, intellectual or sensory impairments which, when dealing with various barriers, may prevent them from participating fully and effectively on society on equal basis with others” (Palmer, 2013).

international community has shown clear care for persons with disabilities through international declarations, conventions and charters that have given global dimensions to protection of persons with disabilities, It has given special importance, Several legislations and laws related to that category were issued, including what was issued by United Nations General Assembly: Resolution 2856 of 1971 Concerning Rights of Mentally Retarded Persons, Resolution 3447 of 1975, Concerning Equal Rights of Persons with Disabilities with Other Humans, and Resolution 37/52 of 1982,

Concerning World Program of Action for Disabled, on addition to declaring period from 1982-1992 International Decade for Disabled, and Resolution 48/96 of 1993, regarding specific rules for achieving equal opportunities for disabled (Kayess & French, 2008).

Article 5 of Declaration on Rights of Persons with Disabilities of 1975 affirmed that " disabled shall have right to measures aimed in enabling him to attain greatest possible degree of autonomy." To that end, Article 7 stipulates that " disabled has right to economic and social security and adequate standard of living, and right, according to his ability, to obtain and retain work, or to practice useful, profitable and remunerative profession, and to belong to trade unions" (Lansdown, n.d.).

In its resolution No, 82/31 issued on December 13, 1976, United Nations recommended that "all states parties should take in account rights and principles contained on Declaration on Rights of Persons with Disabilities when establishing their policies, plans and programmers, and that all relevant international organizations and agencies should guarantee their programs." provisions that guarantee effective implementation of these rights and principles (Lu & Wu, 2022).

- **World Health Organization Disability Assessment Schedule**

Early efforts to measure disability resulted on variable estimates due to lack of common definitions, However, since 2002, International Classification of Functioning, Disability and Health (ICF) framework, based on biosocial model of disability, has been used increasingly (J.-M, Song, 2021).

World Health Organization Disability Assessment Schedule (WHODAS 2.0) is instrument for measuring disability, based on ICF framework, It has been translated in several languages, and its psychometric properties have been examined on numerous studies and validated on several studies spanning different languages, ranging from different health conditions. use of valid instruments for measuring disability across diverse cultural populations, settings, and health conditions has implications for estimation of disability on several levels, including from clinic to nationwide and international levels (Midhage et al., 2021).

According to Üstün et al. (2010), WHODAS 2.0 can be considered powerful and easy-to-use tool for measuring impact of health conditions, monitoring effectiveness of

interventions, and estimating burden of mental and physical disorders among different population groups.

Ćwirlej-Sozańska et al. (2020) noted that WHODAS 2.0 consists of 36 items suitable for assessing health status and disability, and it is reliable and valid tool for evaluating patients with chronic low back pain (LBP) according to their sequometry characteristics, Since it can capture changes on disability after rehabilitation, 36-item WHODAS 2.0 can be used as valid primary endpoint on clinical trials, Given that it is based on principles of International Classification of Functioning and is generally easy-to-use and feasible tool, it can be considered first-choice assessment instrument on rehabilitation field for managing individuals with disabilities due to LBP.

It is evident from study by Midhage et al. (2021) that, within psychiatric outpatient group, 36-item self-rated Swedish version of WHODAS 2.0 demonstrated good reliability and convergent validity, authors concluded that Swedish version of 36-item WHODAS 2.0 is suitable for accurately interpreting disability levels on patients with mental health conditions.

Song and Lee (2018) conducted Korean cultural adaptation of 36-item WHODAS 2.0 Disability Assessment Schedule, Their study showed that adaptation to Korean language was successful and that tool is ready for use on testing its psychometric properties.

Several studies have been conducted to test factorial structure of 36-item WHODAS 2.0 on various cultural contexts and countries, including Iran, Korea, Sweden, Poland, and Taiwan (Ćwirlej-Sozańska et al., 2020; Midhage et al., 2021; Song & Lee, 2018), Most of these studies reported stable factor structures with adequate psychometric properties, supporting tool's use on screening for disability on diverse populations, including both healthy and clinical samples.

However, very few studies have examined factorial structure of 36-item WHODAS 2.0 on Arabic-speaking populations, Therefore, there is need to reassess its psychometric properties on new cultural and linguistic contexts, such Palestinian Arabic context on Israel, where adults live under exceptional circumstances and experience various pressures related to ongoing socio-political situation.

Al-Sharqawi (2023) explained that traditional diagnostic scales have undergone radical transformation due to digitization, enabling greater accuracy and speed on diagnosis, His study aimed to assess feasibility of digitizing these scales on special education setting, study applied electronic questionnaire consisting of 48 items to sample of (437) field workers, divided in four sub-dimensions: ease of use, accuracy of results, time saving, and attracting examinee's attention, results showed that all dimensions achieved high averages, with "ease of use" coming on first place with average of (3.68), followed by "time saving" with average of (3.57), then "accuracy of results" (3.55), and finally "attracting examinee's attention" (3.46), study concluded that digitization contributes positively to improving quality of diagnostic processes and called for converting paper-based scales to electronic ones on accordance with latest global trends, on their study, which addressed obstacles to assessing and diagnosing female students with intellectual disabilities from team perspective.

Al-Dhiyab and Al-Quraini (2018) highlighted numerous challenges facing those working on field within educational institutions, These challenges include lack of support specialties, limited experience on applying modern diagnostic tools, unclear roles among team members, and poor coordination between different entities, study adopted qualitative approach and concluded that it is necessary to train staff, develop multidisciplinary teams, and activate partnerships between educational and healthcare institutions to overcome these obstacles and achieve more accurate and equitable diagnoses.

Al-Kanuni (2023) indicated on his study that Morocco is witnessing significant shift towards establishing new disability assessment system, project that is receiving significant attention from people with disabilities and stakeholders on field, given its anticipated impact on relevant public policies, study examined conceptual framework of assessment systems and highlighted weaknesses on current system, including lack of rights-based and integrative dimension, on addition to implementation and administrative difficulties, study also discussed motivations for adopting new system, reviewing some comparative international experiences, and concluded by raising key questions about most appropriate system to adopt on Moroccan context, taking in account technical, legal, social, and economic aspects related to disability.

Al-Masalha et al. (2019) addressed reality of disability on Naour District of Jordan, study aimed to determine extent and types of disabilities and assess availability of services provided to persons with disabilities on region, social survey approach was used on sample of (353) cases of various disabilities, Data was collected from relevant authorities using questionnaire prepared for that purpose, results showed that percentage of disability on district amounted to approximately (4.5%) of population, with mental disability being most prevalent in (22.4%), It was also found that genetic causes represented most common factor on occurrence of disability in (20.8%), study revealed severe shortage on services provided, such rehabilitation, health insurance, mobility aids, and others, compared to extent of need, study recommended need to double these services, organize awareness and training workshops, and prepare school and public environment to be more inclusive and inclusive of persons with disabilities, on his study on role of Arab Society for Measurement and Evaluation on diagnosing people with disabilities, Al-Marri (2020) emphasized that society plays pivotal role on developing diagnostic processes by establishing principles of integrated diagnosis and spreading culture of professional and ethical awareness among those working on field of disability, study reviewed establishment and objectives of society, highlighting its efforts on organizing scientific conferences and training workshops that focus on modern measurement tools, on addition to initiatives to standardize and update psychological scales used on diagnosing various disabilities, researcher emphasized importance of preparing documented national guide that ensures unification of standards and encourages scientific research on field, on addition to developing comprehensive training programs to qualify those working on integrated diagnosis, thus contributing to achieving justice and improving services provided to people with disabilities.

Duaa Awad and Narmin Awni (2020) explained on their study that diagnosis of learning disabilities faces numerous methodological and conceptual challenges, particularly on distinguishing between diagnostic tests and achievement tests, paper aimed to clarify basic concepts associated with learning disabilities, their types, and their most important manifestations, It also discussed diagnostic tools used, such individual intelligence tests, neuropsychological tests, behavioral assessment batteries, and qualitative academic tests, study highlighted fundamental difference between diagnostic tests used to determine nature of academic deficiency, which are individual and based on type of difficulty, and achievement tests, which are based on educational content and utilize

group assessment, study recommended need to develop specialized diagnostic scales and focus on designing individual standardized tests that contribute to building accurate treatment programs that take in account actual capabilities of students with learning disabilities.

Table 1

Survey of previous studies

Study Title	Author and Year	Study Objective	Methodology	Key Findings
Digital Transformation of Diagnostic Scales	Saber El-Sharkawy (2023)	To evaluate experience of digitizing diagnostic scales among special education workers	Descriptive Analytical	Digitization improves diagnostic accuracy and speed
Barriers to Evaluation and Diagnosis of Female Students with Intellectual Disabilities	Mashael Al-Dhiab and Turki Al-Quraini (2018)	To explore barriers facing work teams on evaluating and diagnosing intellectual disabilities	Qualitative (Descriptive)	Presence of barriers such lack of support, weak expertise, and role ambiguity
Establishing New Disability Assessment System on Morocco	Rachid El-Kanouni (2023)	To discuss challenges and questions surrounding establishment of new disability assessment system on Morocco	Critical Analytical	Need for rights-based and integrated assessment system, learning from international experiences
Assessment of Reality of Disability on Naour District	Haya Al-Masalha et al, (2019)	To survey reality of disability and services provided on Naour District	Social Survey	Significant shortage of services compared to registered rate of disability
Role of Arab Society for Measurement and Evaluation on Diagnosing People with Disabilities	Mohamed Al-Mary Mohamed Ismail (2020)	To highlight role of Arab Society for Measurement and Evaluation on disability diagnosis	Documentary Analytical	Importance of adhering to ethical standards and updating diagnostic tools
Issues on Diagnosing Learning Disabilities (Between Diagnostic and Achievement Tests)	Doaa Awad Sayed Ahmed and Narmin Awny Mohamed (2020)	To analyze issues on diagnosing learning disabilities and differences between diagnostic and achievement tests	Descriptive Analytical	Need to develop individual standardized tests specifically for learning disabilities

1.10 Commentary on Previous Studies

Previous studies clearly agree on importance of developing disability assessment tools and improving their quality to keep pace with technological changes and societal needs, Al-Sharqawi's (2023) study demonstrated that digital transformation of diagnostic scales contributes to enhancing accuracy and speed of diagnosis, that aligns with international efforts to adopt reliable and applicable electronic tools, as is currently happening with adaptation of WHODAS 2.0 scale to multiple languages and cultures.

Similarly, Al-Dhiyab and Al-Qarini's (2018) study focused on obstacles facing teams when assessing intellectual disabilities, particularly on absence of updated and integrated diagnostic tools, that reinforces need for reliable, validated scales such WHODAS 2.0.

In Moroccan context, Al-Kanuni (2023) highlighted need to establish new disability assessment system that is inclusive of social and economic rights, that is same vision underlying WHODAS 2.0 scale, which is based on International Classification of Functioning and Disability (ICF), that makes your study on context on line with trends of updating national assessments, Al-Masalaha et al.'s (2019) study on reality of disability on Naour District revealed weakness of services provided relative to extent of disability, that reinforces importance of standardized and accurate measurement tools to accurately assess actual needs, something WHODAS 2.0 seeks to achieve globally.

Also, Al-Marri's (2020) study addressed role of scientific societies on developing measurement and evaluation tools and emphasized importance of adhering to ethical and scientific standards when developing or applying diagnostic tools, which is crucial for successful adoption of WHODAS 2.0 scale on Arab context.

Finally, Duaa Awad and Nermin Aouni's (2020) study highlighted methodological differences between diagnostic and achievement tests and emphasized that academic diagnosis must be accurate and specific to type of disability, consistent with WHODAS 2.0 philosophy of focusing on individual's qualitative functional performance.

Despite that general agreement on importance of updating and accuracy, previous studies differed on some aspects, While some studies focused on administrative and organizational issues (as on Al-Dhiyab and Al-Quraini), others focused on technical

challenges of digital transformation (as on Al-Sharqawi) or on national policies, as on Al-Kanuni, that highlights need for your study to combine these different dimensions, on manner appropriate to Arab context.

All studies emphasize importance of developing disability assessment tools that are appropriate to local cultural and social contexts, that makes studying psychometric properties of WHODAS 2.0 scale on Arab context critical task.

WHODAS 2.0 scale is based on International Classification of Functioning and Disability (ICF), which is consistent with international standards for rights of persons with disabilities as defined by UN conventions such 2006 Convention on Rights of Persons with Disabilities, which emphasizes need to achieve equal opportunities and full participation of persons with disabilities on society.

Given clear lack of translated and culturally adapted tools for Arab context, as indicated by recent reviews, your study becomes part of scientific response to that gap by retesting psychometric properties of WHODAS 2.0 scale to ensure its validity and effective use on assessing disability among Arabic speakers, particularly under specific social and political circumstances such Palestinian context within Israel.

Based on analysis of previous studies, it is clear that there is general consensus on importance of updating disability assessment tools, However, there is diversity on focus, which reinforces importance of your study as scientific bridge between need for reliable tools and their suitability for Arab context, by testing WHODAS 2.0 scale and adapting it culturally and linguistically to suit local specificities.

Chapter Two

Methods

This section describes methods, statistical techniques, research tool, variables, and procedures which were followed by researcher to achieve study objectives, Moreover, that chapter shows study design and description of sample of study.

To our understanding, that is inaugural investigation to assess validity and reliability metrics of WHODAS 2.0 within Palestinian populace, Hence, our study posited following hypotheses: (a) WHODAS 2.0 would demonstrate four-factor structure on assessing disability among Palestinians, (b) WHODAS 2.0 would exhibit reliable measurement properties on assessing disability among Palestinians, (c) WHODAS 2.0 would demonstrate validity on assessing disability among Palestinians.

2.1 Study design

A quantitative, cross-sectional, and descriptive design is used to achieve study's objectives, These include evaluating adaptation and standardization of WHODAS 2.0 on Arab context (Arabic version), assessing prevalence of disability among Palestinian Arab adults aged 18 to 65 years on Israel, and testing impact of certain demographic variables on disability prevalence, study also aims to determine how well WHODAS 2.0 36-item version aligns with DSM-5 disability standards.

study employs quantitative methodologies to explore variables under investigation comprehensively, Quantitative methods are chosen for two main reasons: first, to gain deeper understanding of phenomenon, and second, to facilitate triangulation of research findings, ensuring robustness and reliability on results.

2.2 Study population and sample

Population of that study includes all Arab adults aged 18 to 65 years on Israel, of both sexes, According to Israeli Central Bureau of Statistics (2021), about half of citizens (200,000) are under eighteen, researcher uses convenient random sampling technique to select 456 adults to represent different genders and locations of residence, table shows breakdown of participants' demographics, including gender, education level, and age group, along with corresponding frequencies and percentages.

For gender, table indicates that 43.0% of 456 participants are male and 57.0% are female, reflecting slight majority of female participants, Regarding education level, majority of participants (53.3%) have less than Bachelor's degree, followed by 40.8% with Bachelor's degree, and 5.9% with Master's degree or higher, that distribution shows diverse educational background among participants, on terms of age group, highest percentage of participants fall in "Less than 25 years" category (40.4%), followed by "41-45 years" (26.1%), remaining age groups have smaller percentages, with least represented group being "46-50 years" (2.2%), that distribution reveals varied age range among participants, with significant portion being relatively young, Overall, table provides clear snapshot of demographic characteristics of study participants, offering better understanding of sample composition and potential implications for data analysis and interpretation.

2.3 instruments

In standard procedure of disability survey, participants complete self-report questionnaire, WHODAS 2.0 is designed to assess level of disability on adults aged 18 to 65 years, Participants assign scores to each item, with options including "none" (1), "mild" (2), "moderate" (3), "severe" (4), and "extreme" (5), These scores are summed to produce domain-specific scores across six different functioning domains: cognition, mobility, self-care, getting along, life activities (household and work/school), and participation (DSM-5, 2013),

To assess concurrent validity, study will use two additional instruments: Disability Assessment Scale (DAS) and Longshi Disability Assessment Scale, WHODAS 2.0 demonstrates good test-retest reliability, which measures instrument's stability across repeated applications, correlation coefficients range from 0.69 to 0.89 in item level, from 0.93 to 0.96 in domain level, and reach 0.98 overall.

2.4 Research Procedures

That study, conducted on January 2022, targets Arab adults aged 18 to 65 residing on Israel, encompassing individuals of both genders, sample is recruited from health centers on Arab community on Israel using convenience sampling techniques, Participants receive information to make informed decision about their involvement on study, followed by signing informed consent form, They are also informed about

purpose of research and given brief description of WHODAS 2.0 instrument, study receives approval from An-Najah Institutional Review Board (IRB), (WHAT IS APPROVAL NUMBER)

WHODAS 2.0 is translated from English in Arabic, Five Arab professionals, experts on Counseling, Psychology, Education, and Arabic Language, evaluate relevance and clarity of translated questions, After completing that evaluation, independent professional back-translates draft questionnaire in English.

2.5 Data Analysis

A 4-factor model was tested through exploratory and confirmatory factor analysis using AMOS 25 software, model yielded good indicators concerning goodness of fit showing: RMSEA=0.057, SRMR=0.048 and CFI=0.88, Descriptive statistics were utilized to assess characteristics of WHODAS 2.0 within Palestinian context, Confirmatory Factor Analysis

confirmatory factor analysis (CFA) (see Table 1 and Fig, 1), was calculated through sample (N=400) of Arab adults between ages of 18 and 65 residing on Israel, Reliability of WHODAS 2.0 Scale

To test reliability of WHODAS 2.0 scale, test-retest, Guttmann Split-Half and Cronbach's alpha measures were calculated as presented on Table 3, Cronbach's Alpha Coefficient of WHODAS 2.0 indicated high level of internal consistency (α=0.933), Moreover, Split – Half coefficient also showed high level of reliability (0.851).

Chapter Three

Results

This study aimed to shed light on Psychometric Properties and Factorial Structure of WHO Disability Assessment Schedule on Arabic Context, study tool and extracting results according to five-point Likert Scale to identify answers of study sample members as follows:

3.1 Study results

Table 2

Frequencies and percentages of demographic study variables

		Frequency	Percent
Gender	Male	196	43.0
	Female	260	57.0
	Total	456	100.0
education level	Less than B.A	243	53.3
	B.A	186	40.8
	M.A +	27	5.9
	Total	456	100.0
age group	Less than 25 years	184	40.4
	25-30 years	75	16.4
	31-40 years	39	8.6
	41-45 years	119	26.1
	46-50 years	10	2.2
	51 years +	29	6.4
	Total	456	100.0

It is clear from results of study that percentage of males amounted to 43% compared to percentage of females, which amounted to 57%, results of study show that members of study sample who hold educational qualifications less than bachelor's degree amounted to 53.3%, while percentage of holders of bachelor's degree constituted 40.8%, and holders of higher than bachelor's degree amounted to 5.9%, As for age groups that formed less than 25 years, they constituted 40.4%, and age group 31-40 years came on second place, with rate of 26.1%, Table 3 Reliability indicators of WHODAS 2.0 (n=456).

Table 3

Item and Corresponding Alpha Values

Item	Alpha	Item	Alpha	Item	Alpha	Item	Alpha
D1.1	0.820	D2.1	0.817	D3.1	0.816	D4.1	0.817
D1.2	0.821	D2.2	0.815	D3.2	0.814	D4.2	0.818
D1.3	0.818	D2.3	0.814	D3.3	0.815	D4.3	0.817
D1.4	0.818	D2.4	0.815	D3.4	0.818	D4.4	0.824
D1.5	0.821	D2.5	0.812	D5.1	0.820	D5.5	0.821
D1.6	0.817	D3.1	0.816	D5.2	0.824	D5.6	0.821
D2.1	0.817	D3.2	0.814	D5.3	0.818	D5.7	0.820
D2.2	0.815	D3.3	0.815	D5.4	0.822	D5.8	0.823
D2.3	0.814	D3.4	0.818	D6.1	0.822	D6.5	0.835
D2.4	0.815	D4.1	0.817	D6.2	0.836	D6.6	0.841
D2.5	0.812	D4.2	0.818	D6.3	0.834	D6.7	0.835
		D4.3	0.817	D6.4	0.837	D6.8	0.836

Note, Alpha values indicate reliability estimates for each item.

Provided tables offer insights in administration and reliability assessment of WHO Disability Assessment Schedule (WHODAS) 2.0 within Arabic context, specifically focusing on sample from Arab sector on Israel on 2023.

Table indicates that there were 456 valid cases included on analysis, with no cases excluded due to missing data or other criteria, that implies comprehensive analysis was conducted on available data, Listwise deletion was employed, meaning cases with missing data across any variables included on analysis were removed, that ensures that only complete cases were used for analysis, which is common approach to handle missing data.

Reliability statistic reported here is Cronbach's Alpha, which is measure of internal consistency, It indicates extent to which all items on WHODAS 2.0 scale are interrelated, measuring reliability of scale on assessing disability.

A Cronbach's Alpha of 0.827 is observed, which suggests high level of internal consistency among items of WHODAS 2.0 scale within that sample, Generally, Cronbach's Alpha values above 0.7 are considered acceptable for research purposes, and

values above 0.8 are often considered good, Thus, value of.827 indicates strong internal consistency reliability for WHODAS 2.0 scale on Arabic context.

Results suggest that WHODAS 2.0 scale, when administered within Arabic context on Israel, demonstrates good reliability, with high degree of internal consistency among its items, that indicates that scale effectively measures disability-related constructs within that population.

Scale Mean if Item Deleted: that column shows mean score on WHODAS 2.0 scale if respective item is deleted from scale, It gives idea of how much each item contributes to overall score:

- Scale Variance if Item Deleted: that column shows variance of WHODAS 2.0 scale if respective item is deleted, Similar to mean, it helps on understanding impact of each item on overall variability of scale scores.
- Corrected Item-Total Correlation: that value represents correlation between each individual item and total score on WHODAS 2.0 scale, corrected for overlap, It indicates how well each item correlates with overall construct being measured by scale.
- Squared Multiple Correlation: that statistic represents proportion of variance on total score on WHODAS 2.0 scale that is accounted for by each individual item, squared, It indicates proportion of variance on total score that can be explained by each item.
- Cronbach's Alpha if Item Deleted: that column shows Cronbach's Alpha value if respective item is deleted from scale, Cronbach's Alpha is measure of internal consistency reliability, and that statistic shows how much removing each item would affect overall reliability of scale.
- Items with higher corrected item-total correlations and squared multiple correlations are considered to be more strongly related to overall construct measured by WHODAS 2.0 scale.
- Items with lower or negative correlations may indicate poor item quality or lack of alignment with overall construct, For instance, items D6.2, D6.3, D6.4, D6.5, D6.6, D6.7, and D6.8 have negative corrected item-total correlations, suggesting they might not be well-aligned with rest of scale items on measuring disability within that specific context.

- Cronbach's Alpha values remain fairly consistent across items, indicating that removing any single item would not substantially alter scale's overall reliability, which is generally positive sign for scale consistency.

In summary, while most items show good alignment with overall construct of disability as measured by WHODAS 2.0 scale within that Arabic context, some items may warrant further examination or refinement to ensure their effectiveness on capturing intended construct.

Table 4

Presents reliability indicators of WHODAS 2.0 instrument based on sample size of 456 individuals

Item	Alpha	Item	Alpha	Item	Alpha	Item	Alpha
D1.1	.929	D2.1	.927	D3.1	.928	D4.1	.930
D1.2	.930	D2.2	.927	D3.2	.926	D4.2	.932
D1.3	.928	D2.3	.928	D3.3	.927	D4.3	.930
D1.4	.929	D2.4	.926	D3.4	.931		
D1.5	.932	D2.5	.926				
D1.6	.926						

Reliability statistics indicate Cronbach's Alpha coefficient of 0.932, which suggests high level of internal consistency reliability among items on scale, that coefficient indicates that items on scale are highly correlated with each other, demonstrating strong reliability, Additionally, there are 18 items on total included on analysis.

Table 5

Differences on WHODAS 2.0 gender, education, age (n=456)

	Male	Female	Less than B.A	B.A	M.A +	Less than 25 years	25-30 years	31-40 years	41-45 years	46-50	51 years +
Mean	22.26	20.37	21.32	20.73	23.00	19.94	20.64	32.62	20.65	18.00	18.31

Analysis of WHODAS 2.0 scores across different demographic groups reveals notable variations on functional impairment levels, Gender differences are evident, with males exhibiting higher average WHODAS 2.0 score compared to females, indicating potentially distinct levels of disability or functional limitations between genders, Education also plays role, as individuals with higher education levels, particularly those

with Master's degree or above, tend to report higher WHODAS 2.0 scores compared to those with lower educational attainment, Furthermore, age appears to significantly influence functional impairment, with middle-aged group (31-40 years) demonstrating highest average WHODAS 2.0 score, followed by 46-50 age group, Conversely, younger individuals (less than 25 years) exhibit lowest levels of functional impairment, These findings underscore importance of considering demographic factors when assessing functional status, with implications for tailored interventions and support services aimed in addressing diverse needs of different population subgroups, Further statistical analysis is warranted to confirm significance of these differences and explore potential interactions between demographic variables.

3.1.1 Exploratory Factor Analysis" WHODAS 2.0

Table 6

KMO and Bartlett's Test Results for Sampling Adequacy and Sphericity

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.793
Bartlett's Test of Sphericity	Approx, Chi-Square	7781.565
	df	153
	Sig.	0.000

Table presents results of Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity, which are commonly used on factor analysis to assess suitability of data for that statistical technique,

KMO measure, with value of 0.793, suggests relatively high level of sampling adequacy, indicating that variables included on analysis are sufficiently correlated for factor analysis to be appropriate, Generally, KMO value above 0.6 is considered acceptable, and values closer to 1 indicate better suitability.

Bartlett's Test of Sphericity, with approximate chi-square value of 7781.565 and significance level (Sig.) of 0.000, indicates that correlation matrix is significantly different from identity matrix, that supports factorability of data, suggesting that there are correlations between variables suitable for extraction of factors.

Table 7

Communalities of Extracted Factors Using Principal Component Analysis

Item	Extraction	Item	Extraction	Item	Extraction	Item	Extraction
D1.1	.621	D2.1	.862	D3.1	.541	D4.1	.858
D1.2	.827	D2.2	.712	D3.2	.694	D4.2	.560
D1.3	.749	D2.3	.757	D3.3	.744	D4.3	.776
D1.4	.594	D2.4	.851	D3.4	.910		
D1.5	.673	D2.5	.708				
D1.6	.825						

Table displays communalities for each item on dataset, both initially and after extraction using Principal Component Analysis (PCA), Communalities represent proportion of variance on each variable that is accounted for by extracted factors.

Initially, all communalities are set to 1.000, indicating that each variable explains 100% of its own variance, After extraction, communalities are adjusted based on contribution of each variable to extracted factors.

Extraction process reveals proportion of variance explained by factors retained on analysis, Communalities range from 0 to 1, with higher values indicating greater proportion of variance explained by extracted factors.

For example, item D3.4 has high communalities value of 0.910 after extraction, suggesting that it contributes significantly to factors extracted from dataset, Conversely, item D3.1 has lower communalities value of 0.541, indicating that it contributes less to extracted factors and may have less reliability on representing underlying constructs.

Overall, communalities provide insight in extent to which each variable contributes to overall factor structure extracted from dataset.

Overall, these results suggest that dataset is suitable for exploratory factor analysis (EFA), providing confidence on subsequent interpretation of factor solutions.

Table 8

Total Variance Explained by Principal Component Analysis

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.667	48.151	48.151	8.667	48.151	48.151	4.144	23.022	23.022
2	2.057	11.426	59.577	2.057	11.426	59.577	3.924	21.802	44.823
3	1.376	7.646	67.222	1.376	7.646	67.222	2.643	14.684	59.507
4	1.163	6.459	73.681	1.163	6.459	73.681	2.551	14.174	73.681
5	.920	5.112	78.794						
6	.886	4.921	83.715						
7	.575	3.194	86.910						
8	.526	2.921	89.830						
9	.408	2.265	92.096						
10	.340	1.887	93.983						
11	.259	1.437	95.420						
12	.233	1.293	96.713						
13	.178	.991	97.704						
14	.139	.773	98.477						
15	.090	.500	98.976						
16	.075	.418	99.395						
17	.061	.340	99.734						
18	.048	.266	100.000						
Extraction Method: Principal Component Analysis.									

Table provides valuable insights in variance explained by each component extracted through Principal Component Analysis (PCA), Here are some observations:

- Initial Eigenvalues: first component has highest initial eigenvalue of 8.667, indicating that it explains most variance on original data, Subsequent components have progressively smaller eigenvalues, indicating less variance explained.
- Extraction Sums of Squared Loadings: After extraction but before rotation, first component still explains most variance, with total of 48.151%, second component explains 11.426% of variance, and subsequent components explain decreasing

amounts of variance, cumulative percentage of variance explained by components increases gradually, reaching 73.681% by fourth component.

- Rotation Sums of Squared Loadings: After rotation, pattern remains similar, with first component explaining most variance (48.151%) and subsequent components explaining decreasing amounts, cumulative percentage of variance explained increases with each component, reaching 100% by 18th component.

Overall, these numbers indicate that first few components capture majority of variance on data, However, decision on how many components to retain should also consider interpretability of components and their practical implications for analysis in hand.

Table 9

Rotated component matrixa

Rotated Component Matrix[a]				
	Component			
	1	2	3	4
D1.1		.551		
D1.2		.886		
D1.3		.792		
D1.4				.616
D1.5				.674
D1.6	.615	.643		
D2.1	.882			
D2.2	.622			.525
D2.3	.769			
D2.4	.714			
D2.5	.641			
D3.1	.601			
D3.2		.664		
D3.3		.669		
D3.4			.914	
D4.1			.868	
D4.2			.543	
D4.3				.788
Extraction Method: Principal Component Analysis, Rotation Method: Varimax with Kaiser Normalization.				
a, Rotation converged on 7 iterations.				

Rotated Component Matrix presents loadings of each item on extracted components after performing principal component analysis (PCA) followed by varimax rotation with Kaiser normalization, Here's detailed analysis of table:

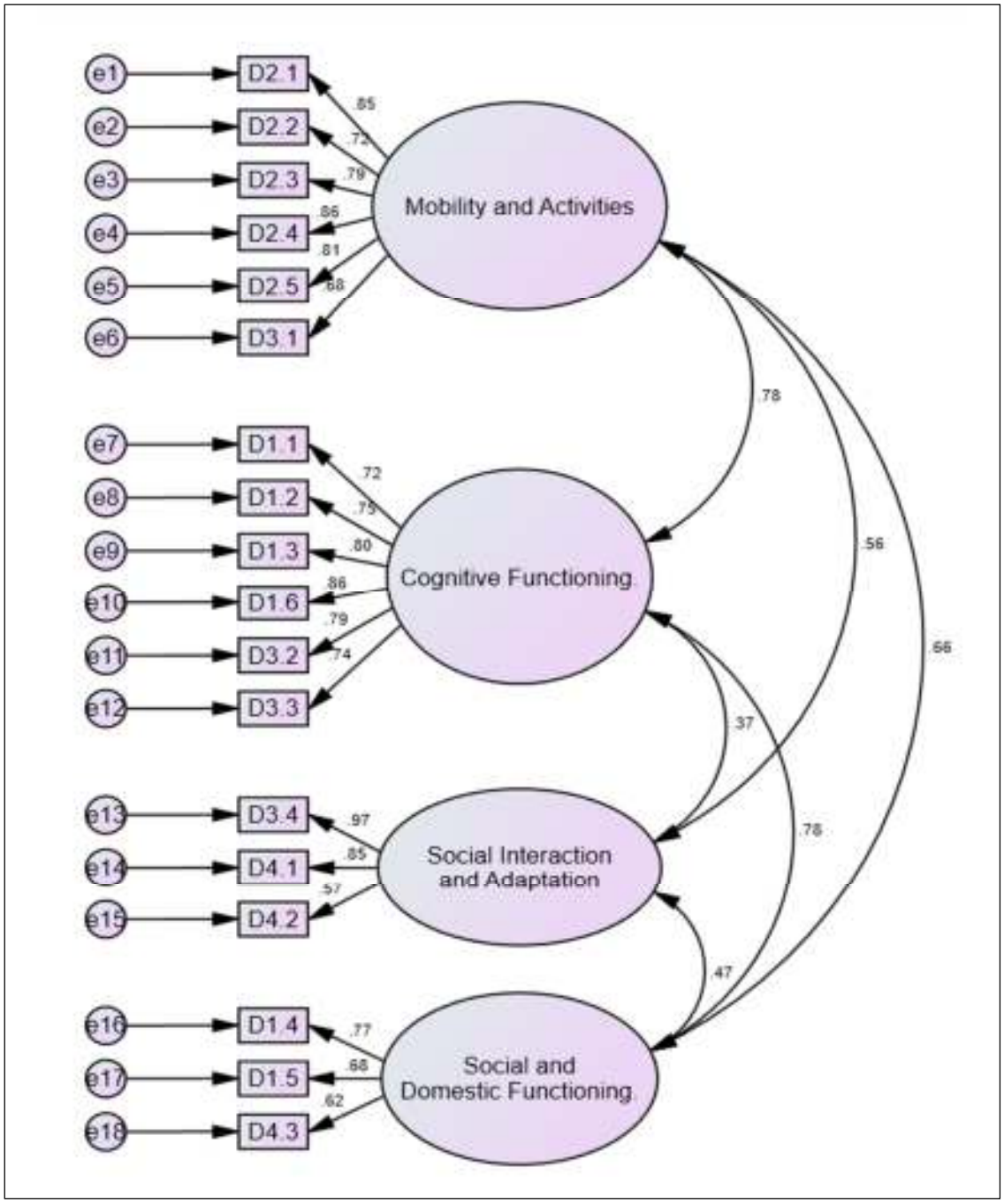
- ‹Component 1›: that component seems to be primarily characterized by items D2.1, D2.2, D2.3, D2.4, and D2.5, as they have relatively high loadings (above 0.6) on component, item D1.6 also has moderate loading on component.
- ‹Component 2›: Items D1.2 and D1.3 have high loadings on component, indicating that they are strongly associated with it, Additionally, items D3.2 and D3.3 also contribute moderately to that component.
- ‹Component 3›: Item D3.4 has highest loading on component, followed by items D4.1 and D4.3, Items D1.6 and D1.5 also contribute moderately to that component, suggesting diverse set of factors.
- ‹Component 4›: that component is mainly characterized by items D3.4, D4.1, and D4.3, which have high loadings, Item D4.2 also contributes moderately to that component.

Overall, rotated component matrix provides insight in underlying structure of data and how each item relates to extracted components, varimax rotation helps on simplifying interpretation of components by maximizing variance of loadings within each component and making structure easier to understand.

These assignments are based on highest loading of each item on respective component, Items with loadings above certain threshold (e.g., 0.5 or 0.6) are typically considered to contribute significantly to that component.

Figure 2

Factor structure of World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0) – 36-item Arabic version



3.2 Factor Structure and Domain Loadings: WHODAS 2.0 Arabic Version (36 Items) Understanding and Communication

In WHODAS 2.0, Understanding and Communication domain assesses difficulties related to comprehending and interacting effectively with others, Although provided items do not directly list that domain, it typically includes items measuring challenges on understanding instructions, following conversations, and expressing oneself,

Effective communication is crucial for daily functioning and social interactions, While specific items from your data set don't directly correspond to that domain, if included, they would measure impact of communication difficulties on individual's overall disability.

- Getting Around

Getting Around domain evaluates mobility and ability to move around on different environments, on your dataset, items D2.1 (0.852), D2.2 (0.717), D2.3 (0.789), D2.4 (0.861), and D2.5 (0.815) fall in that domain, These items have high standardized regression weights, indicating they are effective measures of mobility challenges, consistently high weights suggest that these items robustly capture difficulties related to movement, which is critical for assessing physical disability and planning appropriate interventions.

- Self-Care

Self-Care domain focuses on personal care activities and daily living tasks, Items D1.1 (0.717), D1.2 (0.752), D1.3 (0.802), and D1.6 (0.858) are associated with that domain, weights for these items are generally strong, with D1.6 showing highest weight of 0.858, indicating it is particularly effective indicator of self-care difficulties, These items reflect how well individuals manage personal hygiene, dressing, and other essential activities of daily living, relatively high weights suggest that that domain is well-measured, though some items, like D1.1, show slightly lower effectiveness.

- Getting Along with People

Getting Along with People domain assesses social interactions and relationships, Items D3.1 (0.678), D3.2 (0.787), D3.3 (0.739), and D3.4 (0.968) relate to that domain, D3.4 stands out with exceptionally high weight of 0.968, indicating it is strong measure of social interaction difficulties, variability on weights, with D3.1 showing lower value of 0.678, suggests that while some items effectively capture issues on social interactions, others may require further refinement to improve their relevance and accuracy on reflecting social challenges.

- Life Activities

Life Activities domain evaluates individual's ability to perform major life tasks such work and household responsibilities, Items D4.1 (0.850), D4.2 (0.570), and D4.3 (0.624) are associated with that domain, D4.1 has strong weight of 0.850, indicating it is effective measure of difficulties on life activities, However, D4.2 and D4.3 have lower weights, suggesting these items might not capture domain as effectively, that variability could imply that some aspects of life activities are well-measured while others might need adjustment to better reflect challenges faced by individuals on domain.

These domain-specific insights help on understanding effectiveness of WHODAS 2.0 items and guide potential improvements to enhance scale's relevance and accuracy on assessing disability.

Study results highlights sequential process of using Exploratory Factor Analysis (EFA) to establish initial three-factor structure of WHODAS 2.0, which then informed subsequent Confirmatory Factor Analysis (CFA), that approach ensures that CFA model is grounded on empirical data and theoretical considerations derived from EFA results.

Based on above figuer table, Exploratory Factor Analysis (EFA) of WHODAS 2.0 identified four distinct factors, Here's summary of factors and their associated loadings:

- Factor 1: that factor is characterized by items with moderate to high loadings, suggesting associations with mobility, cognitive functioning, and social/domestic activities.
- Factor 2: Items contributing to that factor have moderate loadings, indicating connections with social interaction, adaptation, and cognitive aspects.
- Factor 3: that factor is prominently influenced by item with very high loading, suggesting strong relationship, possibly related to specific aspects of functioning.
- Factor 4: items associated with that factor exhibit moderate loadings, hinting in associations with cognitive or mobility-related dimensions.

These factors represent distinct dimensions of functioning and disability as captured by WHODAS 2.0 instrument, factor loadings provide insights in underlying structure of data, which can inform further analysis and refinement through Confirmatory Factor

Analysis (CFA), ensuring that model is grounded on empirical evidence and theoretical considerations derived from EFA results.

Model fit summary provides several important numbers to evaluate goodness of fit for tested models, Firstly, chi-square statistics (CMIN) are crucial, with default model yielding value of 3062.753 with 129 degrees of freedom (DF), that value indicates significant difference between observed and expected covariance matrices, ratio of chi-square to degrees of freedom (CMIN/DF) is 23.742, indicating relatively good fit, Additionally, Root Mean Square Residual (RMR) for default model is 0.051, suggesting acceptable model fit.

Furthermore, goodness-of-fit indices, such Goodness-of-Fit Index (GFI) and Comparative Fit Index (CFI), are noteworthy, GFI value of 0.627 and CFI value of 0.621 indicate reasonable fit for default model, Root Mean Square Error of Approximation (RMSEA) is 0.224, which is below threshold of 0.05, indicating close fit to data.

Parsimony-adjusted measures, including PRATIO, PNFI, and PCFI, are also important, PRATIO value of 0.843 suggests that default model achieves good balance between model fit and complexity, PNFI and PCFI values are 0.516 and 0.524, respectively, indicating reasonable fit.

Overall, these numbers suggest that while default model is not perfect fit, it demonstrates satisfactory fit indices across multiple measures.

Table 10

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.612	.540	.622	.551	.621
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

"Baseline Comparisons" table provides critical insight in fit of Default model compared to other models, that evaluation is essential for understanding how well Default model represents data.

Normed Fit Index (NFI) for Default model is 0.612, that value reflects moderate fit, indicating that Default model explains substantial portion of variance on data compared to model with no relationships among variables (Independence model), which scores 0.000, However, that score is still notably lower than 1.000 of Saturated model, which represents perfect fit, that suggests that while Default model is better than model with no structure, it is not fully capturing relationships on data as effectively as Saturated model.

Relative Fit Index (RFI) of 0.540 for Default model further supports that conclusion, RFI also shows that Default model is improvement over Independence model, which scores 0.000, but is still far from ideal fit represented by Saturated model, relatively low RFI indicates that Default model does not fit data as well as desired.

Incremental Fit Index (IFI), with value of 0.622, indicates moderate fit, that suggests some improvement over Independence model, but still falls short of ideal fit, IFI is useful for understanding how much better Default model is compared to baseline model, but Default model has room for improvement to reach ideal fit.

Tucker-Lewis Index (TLI), in 0.551, reveals similar moderate fit, that index compares Default model's fit to Independence model and Saturated model, low TLI suggests that while Default model improves upon Independence model, it is still significantly below ideal fit.

Comparative Fit Index (CFI) of 0.621 for Default model shows that it fits data better than Independence model but does not achieve perfect fit of Saturated model, that moderate CFI indicates that Default model is not yet fully capturing relationships within data as effectively as possible.

In summary, fit indices suggest that while Default model performs better than completely independent model, it is still far from achieving ideal fit, All fit indices are below commonly accepted threshold of 0.90, indicating that model could benefit from further refinement or re-specification to better capture underlying relationships on data.

Based on provided model fit summary, results indicate that default model has achieved reasonably good fit to data, chi-square statistic, although significant due to large sample size, is accompanied by relatively low ratio of chi-square to degrees of freedom

(CMIN/DF), suggesting acceptable fit, Additionally, Root Mean Square Residual (RMR) value is relatively small, indicating that model adequately reproduces observed covariances.

Furthermore, goodness-of-fit indices, including Goodness-of-Fit Index (GFI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA), all suggest that default model provides reasonable representation of data, While GFI and CFI values could be higher for perfect fit, they are within acceptable range, Moreover, RMSEA value is below recommended threshold of 0.05, indicating close fit to data.

Parsimony-adjusted measures also support adequacy of default model, with PRATIO, PNFI, and PCFI values suggesting that model achieves good balance between fit and complexity.

Overall, these results suggest that default model provides satisfactory representation of relationships among observed variables on data, However, it's essential to consider context of research question and specific requirements of analysis when interpreting these results.

Chapter Four

Discussion and recommendations

4.1 Discussion

Determining psychometric properties and factorial structure of WHODAS 2.0 within Arabic-speaking context on Israel involves not only technical validation but also cultural and linguistic adaptation, findings of that study provide strong support for tool's validity, with high internal consistency and good model fit indices, These findings are consistent with previous international studies confirming robustness of WHODAS 2.0 across various cultural and clinical populations.

Studies such Æwirlej-Sozańska et al, (2020), Midhage et al, (2021), and Song and Lee (2018) reported high reliability and internal consistency of 36-item version of WHODAS 2.0 across populations with chronic low back pain, psychiatric outpatients, and on Korean cultural context, respectively, current findings align with these studies, confirming suitability of scale for measuring functional disability on Arabic-speaking population, Specifically, domains of self-care and mobility exhibited strong standardized regression weights, mirroring patterns observed on these earlier validations.

In particular, high communalities and factor loadings for items related to self-care and getting around reflect strong construct validity, that agrees with Midhage et al, (2021), who found good convergent validity for these domains on Swedish psychiatric sample, Similarly, Song and Lee (2018) confirmed that WHODAS 2.0 is reliable instrument after cultural adaptation for Korean speakers, which further supports its adaptability when properly translated and validated.

However, some discrepancies were also observed, especially on domain of getting along with people, where certain items such D3.1 showed lower factor loadings, that contrasts with Æwirlej-Sozańska et al, (2020), who reported generally stable factor structures and strong performance on domain, difference could be due to unique socio-cultural dynamics of Arabic-speaking communities on Israel, where social interactions may be shaped by traditional norms and community structures that are not adequately captured by standardized format.

Furthermore, life activities domain demonstrated varied performance, with items like D4.2 and D4.3 showing lower loadings, that may be explained by socio-economic factors specific to Arabic population on Israel, such disparities on employment and household responsibilities, which can influence how life activities are perceived and reported, These findings suggest need for further refinement of these items to ensure cultural sensitivity and relevance, Song and Lee (2018) also emphasized importance of adapting WHODAS 2.0 to match local context, especially on domains where cultural values directly influence task interpretation.

Results support conceptual framework proposed by ICF model, as WHODAS 2.0 effectively captures multidimensional nature of disability, including impact of environmental and personal factors, biopsychosocial perspective endorsed by Chu and Zhang (2015), Betz (2023), and Park et al, (2019) is reflected on study's findings, reinforcing WHODAS 2.0's value on integrating physical, psychological, and social dimensions of disability.

In conclusion, findings of that study largely support previous international research affirming reliability and construct validity of WHODAS 2.0, While areas such self-care and mobility showed strong agreement with earlier studies, minor inconsistencies on domains like social interaction and life activities highlight importance of continued cultural adaptation, Future efforts should focus on refining lower-performing items and validating these changes through follow-up studies to enhance tool's accuracy and sensitivity within Arabic-speaking contexts.

4.2 Concusion

This study aimed to evaluate psychometric properties and factorial structure of WHO Disability Assessment Schedule 2.0 (WHODAS 2.0) within Arabic-speaking population on Israel, findings indicate that WHODAS 2.0 exhibits strong internal consistency reliability on context, with Cronbach's alpha values exceeding acceptable threshold, supporting its robustness as disability assessment tool, exploratory and confirmatory factor analyses revealed clear four-factor structure that aligns with previous international validations conducted on diverse settings such Sweden, Poland, and Korea (Ćwirlej-Sozańska et al., 2020; Midhage et al., 2021; Song & Lee, 2018).

Notably, several items demonstrated high communalities and strong standardized regression weights, particularly on domains of self-care, getting around, and social interaction, However, some items such D4.2, D4.3, and D3.1 showed lower weights, indicating potential limitations on capturing specific aspects of disability on Arabic cultural context, These discrepancies highlight need for careful cultural and linguistic adaptation of scale to ensure its relevance and sensitivity to lived experiences of Arabic-speaking population.

Comparative fit indices and other model fit statistics (e.g., CFI, RMSEA, and RMR) suggest that adapted version of WHODAS 2.0 achieves acceptable model fit, though further refinements could enhance its performance, These findings align with previous validations which emphasized importance of adapting WHODAS 2.0 to local cultural and linguistic settings to preserve its psychometric integrity and functional applicability (Üstün et al., 2010; Midhage et al., 2021).

In conclusion, WHODAS 2.0 demonstrates valid and reliable measurement properties for assessing disability within Arabic context on Israel, It provides comprehensive and culturally adaptable framework for evaluating functional limitations across various domains, However, to further enhance its effectiveness, targeted revisions of lower-weight items and continuous validation efforts are recommended, that will ensure that tool remains contextually relevant and capable of informing tailored interventions for individuals with disabilities on unique socio-cultural setting.

4.3 Recommendations

Recommendations below come from looking closely in standardized regression weights, They focus on Arabic-speaking population on Israel:

1. Review Low-Weight Items: Items like D4.2, D4.3, and D3.1 have low weights, So, they should be revised after careful review, Getting together on focus groups or doing interviews can really help understand how people see these items, that can show ways to make them better so they work well.
2. Periodic Update & Validation: Regularly updating and checking WHODAS 2.0 scale is super important, that ensures it stays relevant for different groups of people on various settings, review of how all items perform is needed too, along with changes based on new evidence & feedback from users.

3. Improve Social Interaction Measurement: Focus on refining items like D3.1 that deal with Getting Along with People
4. Cultural Adaptation: Change items about mobility, self-care, social interactions, & daily activities to fit real lives of Arabic speakers on Israel, We must consider local infrastructure, daily habits, and economic conditions.
5. Cultural & Linguistic Validation: Every item needs to get complete cultural and linguistic checks, that is especially true for Understanding & Communication, We need to translate these items and make them fit culture, that will help show specific communication challenges that Arabic speakers on Israel face.

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Appendices

Appendix A

World Health Organization Disability Assessment Schedule 2.0

36-item version, self-administered

This questionnaire asks about difficulties due to health conditions, Health conditions include diseases or illnesses, other health problems that may be short or long lasting, injuries, mental or emotional problems, and problems with alcohol or drugs.

Think back over past 30 days and answer these questions, thinking about how much difficulty you had doing following activities, For each question, please circle only one response.

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Self

In past 30 days, how much difficulty did you have in:						
Understanding and communicating						
D1.1	Concentrating on doing something for ten minutes?	None	Mild	Moderate	Severe	Extreme or cannot do
D1.2	Remembering to do important things?	None	Mild	Moderate	Severe	Extreme or cannot do
D1.3	Analysing and finding solutions to problems on day-to-day life?	None	Mild	Moderate	Severe	Extreme or cannot do
D1.4	Learning new task, for example, learning how to get to new place?	None	Mild	Moderate	Severe	Extreme or cannot do
D1.5	Generally understanding what people say?	None	Mild	Moderate	Severe	Extreme or cannot do
D1.6	Starting and maintaining conversation?	None	Mild	Moderate	Severe	Extreme or cannot do
Getting around						
D2.1	Standing for long periods such 30 minutes?	None	Mild	Moderate	Severe	Extreme or cannot do
D2.2	Standing up from sitting down?	None	Mild	Moderate	Severe	Extreme or cannot do
D2.3	Moving around inside home?	None	Mild	Moderate	Severe	Extreme or cannot do
D2.4	Getting out of home?	None	Mild	Moderate	Severe	Extreme or cannot do
D2.5	Walking long distance such kilometre [or equivalent]?	None	Mild	Moderate	Severe	Extreme or cannot do

In past 30 days, how much difficulty did you have in:						
Self-care						
D3.1	Washing whole body?	None	Mild	Moderate	Severe	Extreme or cannot do
D3.2	Getting dressed?	None	Mild	Moderate	Severe	Extreme or cannot do
D3.3	Eating?	None	Mild	Moderate	Severe	Extreme or cannot do
D3.4	Staying by self for few days?	None	Mild	Moderate	Severe	Extreme or cannot do
Getting along with people						
D4.1	Dealing with people you do not know?	None	Mild	Moderate	Severe	Extreme or cannot do
D4.2	Maintaining friendship?	None	Mild	Moderate	Severe	Extreme or cannot do
D4.3	Getting along with people who are close to you?	None	Mild	Moderate	Severe	Extreme or cannot do
D4.4	Making new friends?	None	Mild	Moderate	Severe	Extreme or cannot do
D4.5	Sexual activities?	None	Mild	Moderate	Severe	Extreme or cannot do
Life activities						
D5.1	Taking care of household responsibilities?	None	Mild	Moderate	Severe	Extreme or cannot do
D5.2	Doing most important household tasks well?	None	Mild	Moderate	Severe	Extreme or cannot do
D5.3	Getting all household work done that you needed to do?	None	Mild	Moderate	Severe	Extreme or cannot do
D5.4	Getting household work done as quickly as needed?	None	Mild	Moderate	Severe	Extreme or cannot do
If you work (paid, non-paid, self-employed) or go to school, complete questions D5.5–D5.8, below, Oth- erwise, skip to D6.1						
Because of health condition, on past 30 days, how much difficulty did you have in:						
D5.5	day-to-day work/school?	None	Mild	Moderate	Severe	Extreme or cannot do
D5.6	Doing most important work/school tasks well?	None	Mild	Moderate	Severe	Extreme or cannot do
D5.7	Getting all work done that you need to do?	None	Mild	Moderate	Severe	Extreme or cannot do
D5.8	Getting work done as quickly as needed?	None	Mild	Moderate	Severe	Extreme or cannot do
Participation on society						
In past 30 days:						
D6.1	How much of problem did you have on joining on community activities (for example, festivities, religious or other activities) on same way as anyone else can?	None	Mild	Moderate	Severe	Extreme or cannot do
D6.2	How much of problem did you have because of barriers or hindrances on world around you?	None	Mild	Moderate	Severe	Extreme or cannot do

D6.3	How much of problem did you have living with dignity because of attitudes and actions of others?	None	Mild	Moderate	Severe	Extreme or cannot do
D6.4	How much time did you spend on health condition, or its consequences?	None	Mild	Moderate	Severe	Extreme or cannot do
D6.5	How much have you been emotionally affected by health condition?	None	Mild	Moderate	Severe	Extreme or cannot do
D6.6	How much has health been drain on financial resources of you or family?	None	Mild	Moderate	Severe	Extreme or cannot do
D6.7	How much of problem did family have because of health problems?	None	Mild	Moderate	Severe	Extreme or cannot do
D6.8	How much of problem did you have on doing things by self for relaxation or pleasure?	None	Mild	Moderate	Severe	Extreme or cannot do

H1	Overall, on past 30 days, how many days were these difficulties present?	***Record number of days*** _____
H2	In past 30 days, for how many days were you totally unable to carry out usual activities or work because of any health condition?	***Record number of days*** _____
H3	In past 30 days, not counting days that you were totally unable, for how many days did you cut back or reduce usual activities or work because of any health condition?	***Record number of days*** _____

This completes questionnaire, Thank you.

جامعة النَّجاح الوطنيَّة
كليَّة الدّراسات العليا

الخصائص السيكومترية والبناء العاملي لجدول منظمة الصحة العالمية لتقييم الإعاقة ضمن السياق العربي

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قدمت هذه الرسالة استكمالا لمتطلبات الحصول على درجة الماجستير في علم النفس الاكلينيكي،
من كلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس – فلسطين.

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الملخص

تهدف هذه الدراسة إلى التعرف على الخصائص السيكومترية والبنية العاملية لمقياس تقييم الإعاقة لمنظمة الصحة العالمية (WHODAS 2.0) في السياق العربي، ولتحقيق أهداف الدراسة، تم اعتماد تصميم بحثي كمي، مقطعي، ووصفي، وقد استخدم الباحث أسلوب العينة العشوائية الميسرة، وشارك في الدراسة 456 مشاركًا من البالغين يمثلون تنوعًا في الجنس ومكان الإقامة.

أظهرت نتائج التحليل العاملي الاستكشافي (EFA) لأداة WHODAS 2.0 وجود أربعة عوامل مميزة تعكس أبعادًا مختلفة للأداء والإعاقة، يشمل العامل الأول بنودًا تتعلق بالحركة، والوظائف المعرفية، والأنشطة الاجتماعية أو المنزلية، وقد أظهرت هذه البنود معاملات تحميل متوسطة إلى عالية، مما يشير إلى ارتباطات قوية بهذه الجوانب، أما العامل الثاني فيتضمن بنودًا تتعلق بالتفاعل الاجتماعي، والتكيف، والجوانب المعرفية، وقد أظهرت معاملات تحميل متوسطة تدل على علاقات محددة، ويتسم العامل الثالث ببند واحد فقط ذو تحميل مرتفع جدًا، مما يشير إلى علاقة قوية تتطلب مزيدًا من الدراسة، أما العامل الرابع فيضم بنودًا ذات معاملات تحميل متوسطة، ويُحتمل أن تكون مرتبطة بجوانب معرفية أو حركية من الأداء. توفر هذه العوامل المحددة إطارًا منهجيًا يساعد في تفسير الأبعاد الكامنة التي يقيسها مقياسWHODAS 2.0 ، مما يدعم استخدامه في السياقات السريرية والبحثية التي تهدف إلى فهم ومعالجة الجوانب المختلفة للأداء والإعاقة.

الكلمات المفتاحية: WHODAS 2.0، الخصائص السيكومترية، البنيـــة العامليـــة، الســـياق العربـــي، التحليل العاملي الاستكشافي(EFA) .