ISSN: 1810-2093

FJJM Fu-Jen Journal of Medicine

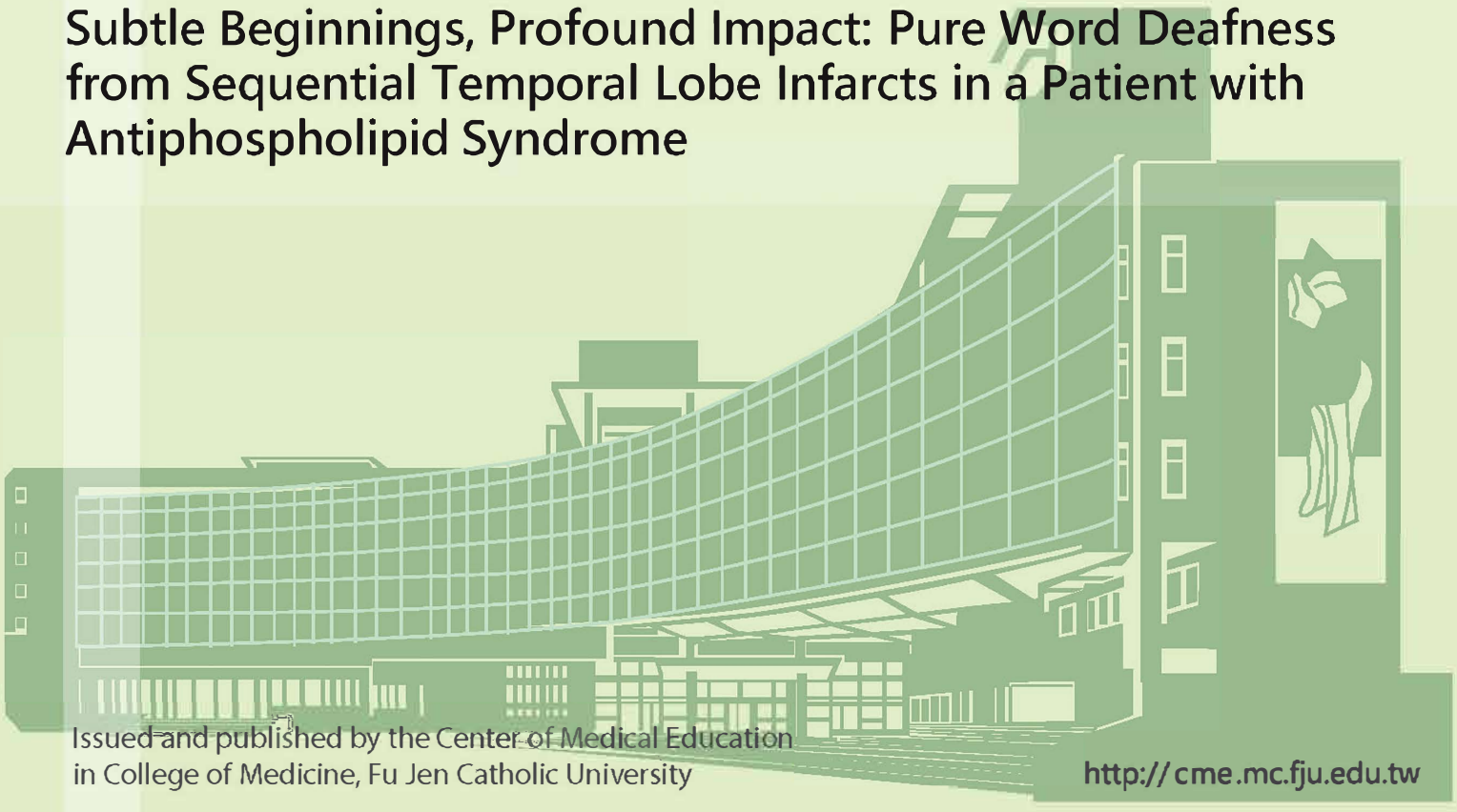
Vol. 24, No.2, June 2026

The Effect of Movie-based Educational Intervention for Psychiatric Occupational Therapy Education at College Students

A Preliminary Analysis of the Technology Physical Fitness Test of Employees in a Northern Regional Hospital

Psychological Resilience in Mental Health: A Concept Analysis

Subtle Beginnings, Profound Impact: Pure Word Deafness from Sequential Temporal Lobe Infarcts in a Patient with Antiphospholipid Syndrome



Issued and published by the Center of Medical Education
in College of Medicine, Fu Jen Catholic University

http://cme.mc.fju.edu.tw

Fu-Jen Journal of Medicine

Vol. 24, No. 2, June 2026

CONTENTS

Original Research Article

The Effect of Movie-based Educational Intervention for Psychiatric Occupational Therapy Education at College Students

Wei-Hsien Chien, Hsuan-Tzu Fu, Yi-Nuo Shih *1*

A Preliminary Analysis of the Technology Physical Fitness Test of Employees in a Northern Regional Hospital

Chien-Ju Chou, Hsun-Hao Chang, Yu-Mei Jeng, Meng-Chi Yeh, Chiao-Wen Kuo, Ya-Liang Chang, Chi-Feng Hung *10*

Review Article

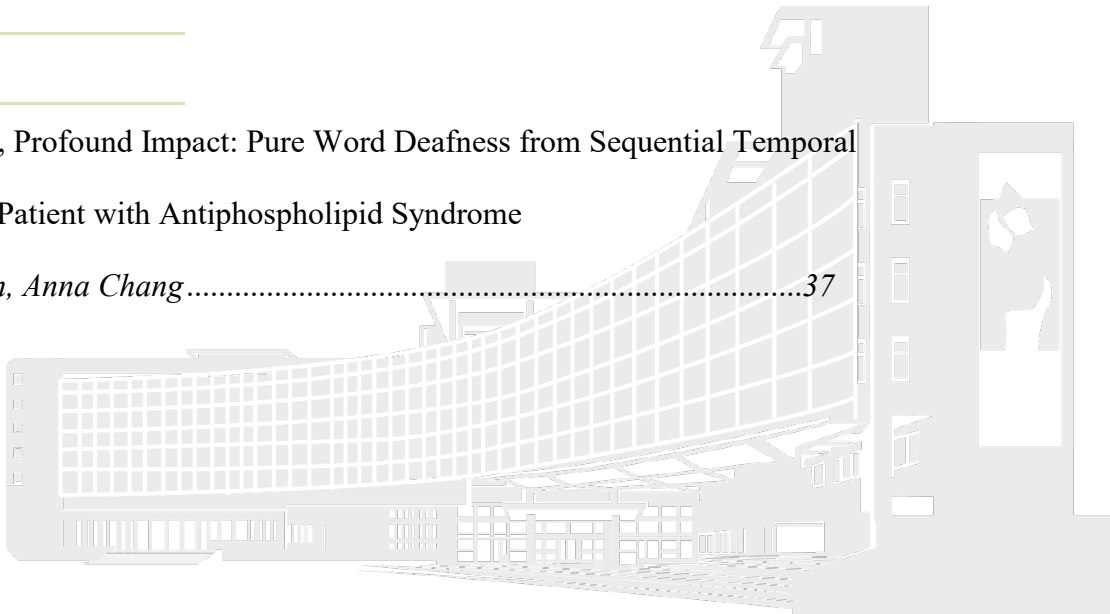
Psychological Resilience in Mental Health: A Concept Analysis

Mei-Hsin Ho, Jui-Hsiu Tsai *21*

Brief Report

Subtle Beginnings, Profound Impact: Pure Word Deafness from Sequential Temporal Lobe Infarcts in a Patient with Antiphospholipid Syndrome

Jing-Sian Shih, Anna Chang *37*



Submitted June 11, 2025.

Final version accepted November 27, 2025.

Cite as: Wei-Hsien Chien, Hsuan-Tzu Fu, Yi-Nuo Shih

The Effect of Movie-based Educational Intervention for Psychiatric Occupational Therapy Education at College Students

Fu-Jen Journal of Medicine 24(2): 1-9, 2026.

DOI:

10.53106/181020932026062402001

Original Research Article

The Effect of Movie-based Educational Intervention for Psychiatric Occupational Therapy Education at College Students

Wei-Hsien Chien[1,2], Hsuan-Tzu Fu[1], Yi-Nuo Shih[1,2,*]

[1] MS program in transdisciplinary long term care, College of Medicine, Fu Jen Catholic University.

[2] Department of Occupational Therapy, College of Medicine, Fu Jen Catholic University, New Taipei City, Taiwan.

*Corresponding author. E-mail address:

062161@mail.fju.edu.tw (Yi-Nuo Shih)

ABSTRACT

Background and purpose: Movies into teaching may improve students' knowledge and attitudes. The purpose of this study is to explore the effects of movie-based educational intervention on mental illness knowledge and attitudes toward mental illness at college students. ***Methods:*** 54 occupational therapy students from a university in New Taipei City were enrolled. Each student was assessed by "Mental Illness Knowledge assessment" and "Mental Illness Stigma Scale" at pre-test, mid-test and post-test, The differences of these results were calculated by SPSS 20.0. ***Results:*** After movie-based educational intervention, the knowledge of mental illness is improved but not significantly; there is no significant difference between whether there are movies on the students' attitude towards mental illness. ***Conclusion:*** Movie-based educational intervention at occupational therapy students is no obvious effect on the learning of mental illness knowledge, but the score increased. Movie-based educational intervention may helpful for psychiatric occupational therapy education for college students.

Keywords: Medical education, Movies, Occupational therapist, Stigma

INTRODUCTION

Mental illness is one of the common diseases in today's society. However, with this high prevalence of mental illness, the general public still does not know much about this group of people, resulting in stigma[1]. The study found that people with mental disorders also suffer from stigma and social alienation, withdrawal, and discrimination[2]. Studies show that people with mental illness are more stigmatized than people with physical disabilities[2-4]. Add to this fact that many of the perpetrators of crimes reported in the past are mentally ill, and the general public is more likely to view the mentally disabled as dangerous and violent. This makes them more stigmatized[5].

The stigma of mental illness can be divided into three types: Public stigmas, self-stigmas, and structural stigmas, representing labeling, stereotypes, social injustice, and imbalance, often

leading to negative reactions of any stigmatized group[6,7]. Stigmatized terms such as "crazy, mad, mania" make people with a mental health condition suffer differential treatment in health insurance, medical care, housing, and occupation, or inappropriate social isolation[6,8]. At the same time, the study also pointed out that social stigma is associated with mental illness[8]. When a mentally ill person's social stigma is higher, the psychological adaptation to the disease worsens, leading to a deterioration in the patient's depression, a reduction in self-esteem, and a more significant impact on self-worth[9]. Although legislation has been enacted to protect the fundamental rights and interests of persons with mental disorders, there is still widespread discrimination and stereotypes in the media. This is a very negative factor for the recovery of mental illness, and it is essential to promote the de-stigmatization of mental illness patients[10]. The stigma of mental illness is a problem that affects people's awareness of the mental illness and their perceptions of mental illness. Moreover, it creates stereotypes and discriminatory attitudes and distance. The stigma of mental illness impacts the stigmatization of people with mental and physical disabilities, including thoughts, emotions, and behaviors, consciously or unwittingly[7].

In addition, studies have indicated that the most stigmatized experiences of people with mental illness are contacting with mental professionals, that relatives of patients consider health care workers intolerant, and lack of knowledge and understanding of patient communication[11,12]. Another review of 19 studies on the treatment process of psychiatric patients found that patients faced many obstacles from identifying health problems, arriving at hospitals, discussing diseases and treatment, tracking and continuous treatment, and the entire course of treatment, the stigma of mental illness[13]. Sideras S, et al. have also indicated that the stigma attached to psychiatric patients affects the health, care quality, and quality of life of patients. Patients also tend to delay access to health care due to stigma and experience, delaying recovery and thus becoming obstacles to social reintegration. Such stigmatization and discrimination, hidden in the perception of medical professionals, may cause more significant harm to people with mental health conditions and affect the quality of medical care[14]. Therefore, professionals need to change attitudes towards stigmatizing persons with mental disabilities. Educators can change stigmatization through "initiatives," "education," and "engagement," with the most widely promoted part being "education"[7]. Therefore, university education should provide students with proper care, knowledge, attitude, and skills for mental illness at the learning stage to prevent the subsequent stigmatization of mental illness[15]. The literature above shows that it is urgent to develop an effective education model in university education so that the future medical staff has the correct mental health knowledge, attitude, and practice.

Experience learning is an important way of learning in medical education. Medical professionals do the majority of clinical learning through learning by doing or personal experience. Through the actual subjective experience, the learner emphasizes reflection to get meaningful results, build cognitive structure, and have the ability to solve new problems[16]. In other words, students in the current learning will be given a learning situation and the impacts of the past similar experience. To understand the significance of experience, educators can effectively use learners' experiences to help learn and provide more situations to achieve learning goals[17]. Experience can be transformed into an individual's knowledge and even further to attitude learning, viewing, and evaluating things by reflection. There are two directions of reflection. One is external, understanding, analyzing, and sorting out the knowledge and meaning of experience. The other is introverted, self-aware, understanding thoughts and feelings, understanding your attitude, values, and expectations, and reaching further self-development[18]. Narratology is a way of reflection, and it is through the patient's story to strengthen the understanding of illness. From the reflection of patient experience, the medical service of doctors can be closer to the needs of patients, empathy, doctor's quality, and responsibility. Moreover, the doctors can gain more trust and better medical relationships[19]. Narrative medical training includes the ability to read literature related to illness and to learn analysis, communication, and empathy. However, reflective writing describes the experience of illness from the patient's point of view, and the replacement of the role allows doctors to be closer to the patient's world and understand the patient's real feelings and needs. Reflective writing allows physicians to examine the way of decision-making, feelings, behavior, interpersonal interaction, and knowledge and technology[20].

Furthermore, the film integration into medical education is similar to the use of narrative medical training[21]. Learners use the relevant topic film to teach the medical users and patients to describe the experience and feelings of illness from different perspectives and understand the patient's actual needs. At the same time, learners also use reflective writing or some reflective questions designed by the teacher to allow learners to learn

about medical decisions, professional knowledge, and medical literacy[19]. Many scholars have recognized the teaching method of integrating film into medical education in recent years[22,23]. It is believed that film provides entertainment and much discussion about values and psychological issues and even provides some relevant knowledge for viewers to improve professional knowledge. Gallagher et al. has allowed medical students to use their spare time to watch relevant films to learn about public health[22]. In addition, according to McCann et al. research, the nursing department students can learn mental health knowledge through the integration of film and even discuss critical thoughts on mental health issues[23]. Scholars in Taiwan also agree that "film teaching" is not only a medium for both cognitive and emotional education but is also the liveliest educational medium in the humanities[24]. Through this shared visual experience, "film teaching" provides a way of classroom discussion and participation[25]. In recent years, more and more films have been used as an educational method against stigma[26,27]. As early as 1979, the experience of applying "film teaching" in medical education[28] is used in psychiatric education[29,30]. In the past 40 years, foreign medical educators have long regarded the film as an educational tool, primarily teaching mental health students through mental health scenarios[31]. It can be seen that "film teaching" can not only provide viewers with understanding of the nature and the reality of mental illness but also provide profound emotional fluctuations and artistic temperament so that learning becomes lively and exciting[27].

Overall, integrating movies into teaching may improve students' knowledge and attitudes. However, there are still few discussions in China on the use of film as teaching material in occupational therapy for psychiatry. This study aims to explore the effectiveness of film as teaching material in occupational therapy for psychiatry and provide a reference for domestic medical education. In general, the objectives of this study are as follows:

1. To explore the benefits of incorporating film into teaching and learning about mental illness among students of occupational therapy.

2. To explore the impact of integrating film into teaching and learning on the attitudes towards mental illness among students of occupational therapy.

MATERIALS AND METHODS

Research Design

This study adopts the one-group pretest-posttest design of the pre-experimental design to explore the movie-based educational intervention for psychiatric occupational therapy education at college students.

Ethical Approval

Ethical approval was given by the medical ethics committee of Fu Jen Catholic University Institutional Review Board (IRB). All survey and audit data were collected anonymously. Written consent was taken immediately prior to the test, and participants were reminded that it could be withdrawn at any time. (ClinicalTrials.gov number, C108183.)

Participants

There are 54 students who are studying "psycho-social foundation of occupational therapy " from department of occupational therapy in the medical college from a university in New Taipei City were the subjects of the study. We explain the purpose of this study in class and welcome students who have taken the course to decide whether to join this study as subjects. Inclusion criteria were students who were willing to participate.

Research equipment

This project adopted the following tools.

Mental Illness Knowledge assessment:

There are 24 questions in total, general knowledge questions with a total score of 0 to 24 points. The higher the score, the more students understand mental illness.

Mental Illness Stigma Scale:

The study adopted the authorized version of the Mental Illness Stigma Scale–Short Form (12 items) developed by Han, Der-Yan, and Chen, Sue-Huei (2008), including its questionnaire items and scoring method. The internal consistency coefficient ranged from 0.90 to 0.84, and the test-retest reliability ranged from 0.81 to 0.89. The total scale demonstrated good internal consistency, with a Cronbach's α of 0.88, and excellent one-week test–retest reliability of 0.92. The scale employed a four-point Likert-type scoring system, where 1 indicated "strongly disagree," 2 "disagree," 3 "agree," and 4 "strongly agree." All items were positively worded, and higher total scores reflected a greater level of stigma toward mental illness.[32]

Research procedure

A. Expert meeting: An expert meeting consisting of 5 to 7 psychiatric occupational

therapists will review whether the discussion content of each film needs to be adjusted.

B. Pre-test: Administer the questionnaire in the first week.

C. Film teaching and discussion intervention: Movies (public broadcast version) are played in class in the fourth and twelfth weeks, and movies are played during extracurricular time in the sixth, tenth and fifteenth weeks, allowing students to watch freely.

D. Mid-term test: The questionnaire will be administered in the eighth week.

E. Post-test: Questionnaires were administered in the 17th week.

Data Analysis

Data analysis was performed using the SPSS 25.0 statistical software. The differences between test were using the sample t- test.

RESULTS

In terms of mental illness knowledge, the "Mental Illness Knowledge assessment:" consists of 24 questions. The average score of the pre-test was 18.87, the average score of the mid-test was 18.30, and the average score of the post-test was 19.11. The scores decreased slightly from the pre-test to the mid-test, and the average score of the post-test was the highest. The t-test between the pre-mid-test on the knowledge of mental illness was 1.961, the *p* value was 0.028. The t-test between the mid-test and post-test was -2.682, the *p* value was 0.005, above two t-tests were significantly different. But the t-test between pre-test and post-test was -1.006, the *p* value was 0.16, did not reach a significant difference. Which means that after the film teaching, the students first regressed significantly ($p < .05$) and then made significant progress ($\mathbf{p} < .05$), but finally there was no significant difference between the pre-test and the post-test ($p > .05$). As shown in table 1.

The t-test of the pre-mid test of "Mental Illness Stigma Scale" was -0.251, the *p* value was 0.401, did not reach a significant difference. The t-test between the mid and post-test was -0.310, the *p* value was 0.379, did not reach a significant difference. The t-test between the pre-test and post-test was -0.717, the *p* value was 0.239, did not reach a significant difference also. There was no significant difference in the mental illness stigma scale among the three groups, indicating that there was no significant difference in the attitudes towards mental illness stigma between students with and without film instruction ($p > .05$). As shown in table 2.

post-hoc power analysis showed that the study had a power of 0.99 to detect a large effect (0.5), 0.62 to detect a medium effect (0.3), 0.11 to detect a small effect (0.1) at an alpha level of 0.05. To achieve a power of 0.8 to detect a medium effect (0.3), the sample size of 82 is required. Therefore, the sample size must be increased to 82 in the future to obtain a power of 0.8.

DISCUSSION

Mental Illness Knowledge assessment

"Mental Illness Knowledge assessment" is a simple measure of the learner's effectiveness in teaching integration of mental illness film, including mental disorders, depression, bipolar disorder, drug and alcohol addiction, and obsessive-compulsive disorder. It is a characteristic topic and related to this study. The results show that, after the integration of film-based teaching, occupational therapy students (N=54) did not exhibit a significant increase in scores (p=0.16) **(Table 1)**. However, following the implementation of film-based teaching, the average score rose from 18.87 to 19.11. It is speculated that students may have studied mental illness in their first year of college because the department required course credits. The students may have studied all kinds of mental diagnoses and symptoms, so it may cause them to have a higher pre-test score, leading to no significant difference in the pre-test results.

The study by Gallagher et al. demonstrated that watching films can have a moderate to strong effect on 60% of students, with some participants reporting that they could learn knowledge from films and found the learning process more engaging[22]. Furthermore, one study found that using extracurricular time for film-based teaching and discussion resulted in 77% student participation. The study indicated that films help bridge the gap between theory and practice, providing students with the opportunity to engage in simulated practice within a safe environment[33]. Bilge and Palabiyik, through a questionnaire survey of nursing students from freshmen to juniors, found that most students felt watching short films helped supplement their knowledge of various diagnoses. The films also enabled them to establish better doctor-patient relationships and think more patient-oriented treatment programs[34]. Additionally, guided discussions after the films helped nursing students practice skills such as communication, counseling, and critical thinking, while also boosting their self-esteem and confidence, thereby fostering individualized professional abilities[34]. These findings align with the perspective of the current study, as all the aforementioned research highlights that films are engaging for students and can effectively stimulate their learning motivation.

Mental Illness Stigma

The study's "Mental Illness Stigma Scale" (for example, if someone else knew I was going to a psychiatric clinic that would damage my relationships.) If I were mentally ill and known, my reputation would be tarnished.) After watching the film, the Department of Occupational Therapy students were negatively affected by the stigma of mental illness but did not show significantly (p= 0.239) **, as shown in Table 2**. The results indicate that students exhibited an increase in "Mental Illness Stigma attitudes toward mental illness" after watching the film, though the result did not show statistical significantly. It is speculated that the lack of significant findings may be due to the fact that the participants were second-year undergraduate students from the Department of Occupational Therapy, who had not yet had the opportunity to observe or intern in psychiatric settings. Additionally, the study design did not incorporate group discussions before or after the film to enhance the students' understanding and perceptions of mental illness and patients. Therefore, it is hypothesized that these two factors may account for the lack of significant results in the students' attitudes toward mental illness stigma.

A study by Rohm et al. investigated the impact of film-based education on the stereotypes and social distance related to mental illness among students in rehabilitation-related programs. The study involved showing a film about schizophrenia and assessing both the experimental and control groups one week before and one week after the viewing. The results revealed no significant differences between the two groups in terms of changes in stereotypes and social distance. The study also suggested that the entertainment value of the film can influence viewers' stereotypes of the patients and social distance, which is related to how the film is presented and described. If the film is overly realistic, it may reduce stereotypes, but it could also increase social distance toward individuals with mental illness. Additionally, the individual motivations for watching the film, along with viewers' cognitive and emotional states, can affect how they interpret the content, potentially leading to inconsistent results, where stigma attitudes might either decrease or increase[35]. Similarly, a study by Petkari et al. found that after ten weeks of film-based education, certain items related to stigma showed a significant decrease, but the overall results from pre- and post-tests did not reach statistical significance. The study also recorded feedback from students, such as "I understand them better because I tried to see things from the perspective of someone with mental illness," and "We are all human and face problems at times." Although the scores did not reach statistical significance, individual students exhibited significant changes in their attitudes[26]. These findings further support the 2017 study by Rohm et al., which noted that individual traits, motivations for watching the film, and cognitive and emotional states are related to the lack of significant changes in stigma attitudes[26, 35].

Rusch, N. et al. pointing that education can be used to change the stigmatization of students of the affected person[7]. Therefore, university education should allow students to provide their knowledge, attitude, and skills (care and interaction skills) on mental illness at the learning stage, preventing subsequent stigmatization of mental illness[15].

Additionally, a study by Rueb, M. et al. also highlighted that medical students who participated in a film-based educational program, which included discussion sessions, were encouraged to reflect on their perspectives, viewpoints, and experiences. This approach was found to be helpful in enabling students to develop and apply humanitarian, empathetic, and interpersonal skills[36]. The literature above shows that it is urgent to develop an effective education model in university education so that the medical staff has the correct mental health knowledge, attitude, and practice. In summary, the research results show that film teaching is effective in medical education. The result shows that if the film integration course can be added to the group discussion, the movie appreciation can increase students' interest in the class. It may also increase the students' reflection on learning about the disease (or course content) and improve their professional knowledge, medical literacy, and other abilities.

Limitations

Our research project still has its limitations, as described below.

1. Only 54 students were enrolled as research participants in this study with a power of 0.62 to detect a medium effect (0.3) and 0.11 to detect a small effect (0.1) at an alpha level of 0.05. The sample size must be increased to 82 in the future to obtain a power of 0.8 to detect a medium effect (0.3).

2. This study is a pilot study; the "Mental Illness Knowledge assessment" and "Mental Illness Stigma Scale" questionnaires were designed by Professor Shi for this research. Reliability and validity results are not yet available, which is a limitation of this study. Future analyses of the questionnaire's reliability and validity will be conducted.

CONCLUSIONS

This article explores the effect of movie-based educational intervention for psychiatric occupational therapy education at college students, and draws the following conclusions:

1. Movie-based educational intervention may helpful for psychiatric occupational therapy education for college students.

2. In the future, larger sample sizes and more research tools can be used to explore the benefit of movie-based educational intervention to students by applying them to different research objects.

REFERENCES

1. Stuhlmiller C, Tolchard B: **Understanding the impact of mental health placements on student nurses' attitudes towards mental illness**. *Nurse Educ Pract* 2019, **34**:25-30.
2. Migliorini C, Tonge B, Taleporos G: **Spinal cord injury and mental health.** *Aust N Z J Psychiatry 2008, 42(4):309-314.*
3. Keusch GT, Wilentz J, Kleinman A: **Stigma and global health: developing a research agenda**. *Lancet* 2006, **367**(9509):525-527.
4. Migliorini C, Callaway L, New P: **Preliminary investigation into subjective well-being, mental health, resilience, and spinal cord injury.**.*J Spinal Cord Med 2013, 36(6):660-665.*
5. I-Chen Tang, Hsin-Yi Chen, Hui-Ching Wu, Shih-Rong Cheng, Yi-Ru Kao: **Perceptions of Stigmatization and Stigmatization Experience-The Example of People with Spinal Cord Injuries and Psychiatric Disabilities.**.*Journal of Disability Research 2009, 7(4): 230-244.*
6. Link BGaJCP: **Conceptualizing Stigma.** *Annual Review of Sociology* 2001, **27**(1):363-385.
7. Rusch N, Angermeyer MC, Corrigan PW: **Mental illness stigma: concepts, consequences, and initiatives to reduce stigma**. *Eur Psychiatry* 2005, **20**(8):529-539.
8. Vistorte AOR, Ribeiro WS, Jaen D, Jorge MR, Evans-Lacko S, Mari JJ: **Stigmatizing attitudes of primary care professionals towards people with mental disorders: A systematic review**. *Int J Psychiatry Med* 2018, **53**(4):317-338.
9. Corrigan PW, Al-Khouja MA: **Three agendas for changing the public stigma of mental illness**. *Psychiatr Rehabil J* 2018, **41**(1):1-7.
10. Corrigan PW, Watson AC: **Understanding the impact of stigma on people with mental illness**. *World Psychiatry* 2002, **1**(1):16-20.
11. Svensson B, Markstrom U, Bejerholm U, Bjorkman T, Brunt D, Eklund M, Hansson L, Leufstadius C, Gyllensten AL, Sandlund M *et al*: **Test-retest reliability of two instruments for measuring public attitudes towards persons with mental illness**. *BMC Psychiatry* 2011, **11**:11.
12. Hui CLM, Leung WWT, Wong AKH, Loong KY, Kok J, Hwang A, Lee EHM, Chan SKW, Chang WC, Chen EYH: **Destigmatizing psychosis: Investigating the effectiveness of a school-based programme in Hong Kong secondary school students**. *Early Interv Psychiatry* 2019, **13**(4):882-887.
13. Happell B, Davies C, Scott D: **Health behaviour interventions to improve physical health in individuals diagnosed with a mental illness: a systematic review**. *Int J Ment Health Nurs* 2012, **21**(3):236-247.
14. Sideras S, et al.,: **Impact of a Simulation on Nursing Students' Attitudes Toward Schizophrenia.***Clinical Simulation in Nursing* 2015, **11**(2):134-141.
15. Arbanas G, Bosnjak D, Sabo T: **Impact of a Nursing in Psychiatry Course on Students' Attitudes Toward Mental Health Disorders**. *J Psychosoc Nurs Ment Health Serv* 2018, **56**(3):45-51.
16. Kai-Kuen Leung: **The Roles of Reflection in Medical Education.***Taiwan J Fam Med 2015; 25: 165-173.*
17. Rogers CR, Freiberg, H.J.: **Freedom to Learn. 3rd ed.***Columbus, OH: Merrill/Macmillan; 1994.*
18. Kolbs D: **Experiential Learning: Experience as the Source of Learning and Development.***Englewood Cliffs, NJ: Prentice-Hall; 1984.*
19. Charon R: **The patient-physician relationship. Narrative medicine: a model for empathy, reflection, profession, and trust**. *JAMA 2001, **286**(15):1897-1902.*
20. Alcauskas M, Charon R: **Right brain: reading, writing, and reflecting: making a case for narrative medicine in neurology**. *Neurology 2008, **70**(11):891-894.*
21. Kumagai, AK: **A Conceptual Framework for the Use of Illness Narratives in Medical Education.** *ACADEMIC MEDICINE 2008, 83 (7) , pp.653-658.*
22. Gallagher P, Wilson, N., & Jaine, R.: **The efficient use of movies in a crowded**

curriculum.*The clinical teacher 2014, 11(2):88-93.*

23. McCann E, Huntley-Moore S: **Madness in the movies: An evaluation of the use of cinema to explore mental health issues in nurse education**. *Nurse Educ Pract* 2016, **21**:37-43.
24. 葉炳強: **電影與醫學教育**. *醫學教育* 1999, **3**(3):279-289.
25. Carpenter J, B. Stevenson, and E. Carson: **Creating a shared experience: using movies in nursing education.** . *Nurse Education* 2008, **33**(3):103-104.
26. Petkari E: **Building Beautiful Minds: Teaching Through Movies to Tackle Stigma in Psychology Students in the UAE.***Acad Psychiatry* 2017, **41**(6):724-732.
27. Hankir A, et al.: **The Wounded Healer film: A London College of Communication event to challenge mental health stigma through the power of motion picture.***Psychiatr Danub* 2017, **29**(suppl 3):307-312.
28. Fritz GK, Poe RO: **The role of a cinema seminar in psychiatric education**. *Am J Psychiatry* 1979, **136**(2):207-210.
29. Gorring H, J. Loy, and H. Spring: **Cinemeducation: using film as an educational tool in mental health services.***Health Info Libr J* 2014, **31**(1):84-88.
30. Akram A, et al.: **Crossing the line--learning psychiatry at the movies.***Int Rev Psychiatry* 2009, **21**(3):267-268.
31. Hankir A, et al.: **Cinematherapy and film as an educational tool in undergraduate psychiatry teaching: a case report and review of the literature.***Psychiatr Danub* 2015, **27**(suppl 1):S136-142.
32. Han, D.Y, & Chen, S.H. (2008). Psychometric Properties of the Perceived Psychiatric Stigma Scale and Its Short Version. Formosa Journal of Mental Health, 21(3), 273-290.
33. Shankar PR, Rose C, Balasubramanium R, Nandy A, Friedmann A: **Using Movies to Strengthen Learning of the Humanistic Aspects of Medicine.***J Clin Diagn Res 2016, 10(1):JC05-07.*
34. Bilge A, Palabiyik O: **The Effect of Short Films About Mental Health and Disorders on Preventing Stigmatization in Nursing Education.** *Arch Psychiatr Nurs 2017, 31(1):88-92.*
35. Rohm, A., Hastall, M. R., & Ritterfeld, U:**How movies shape Students' attitudes toward individuals with schizophrenia: an exploration of the relationships between entertainment experience and stigmatization**. *mental health nursing2017, 38(3):193-201.*
36. Rueb M, Siebeck M, Rehfuess EA, Pfadenhauer LM: **Cinemeducation in medicine: a mixed methods study on students' motivations and benefits.** *BMC Med Educ 2022, 22(1):172.*

TABLES

Table1. Analysis results of the three scores of "Mental Illness Knowledge assessment" (n=54)

items	Pre-test **Average (SD)**	Mid-term test **Average (±SD)**	Post-test **Average (±SD)**	Pre-test - Mid-term test		Mid-term test - Post-test		Pre-test - Post-test	
				t	*p*	*t*	*p*	*t*	*p*
Mental Illness Knowledge assessment	18.87 (2.15)	18.30 (1.97)	19.11 (2.15)	1.961	0.028*	-2.682	0.005**	-1.006	0.16

*$p < .05$,**$p < .01$

Table2. Analysis results of the three scores of "Mental Illness Stigma Scale" (n=54)

items	Pre-test **Average (SD)**	Mid-term test **Average (SD)**	Post-test **Average (SD)**	Pre-test - Mid-term test		Mid-term test - Post-test		Pre-test - Post-test	
				t	*p*	*t*	*p*	*t*	*p*
Mental Illness Stigma Scale	24.87 (7.18)	25.04 (8.40)	25.26 (7.22)	-0.251	0.401	-0.310	0.379	-0.717	0.239

*$p < .05$,**$p < .01$

The Effect of Movie-based Educational Intervention for Psychiatric Occupational Therapy Education at College Students

以電影為基礎的教育介入對於精神領域職能治療學生的影響

簡位先[1,2]　傅宣慈[1]　施以諾[1,2,*]

中文摘要

背景與目的：將電影融入教學活動中可能有助於提升學生對特定主題的知識與態度。本研究旨在探討以電影為基礎的教育介入對大學生精神疾病知識與其對精神疾病態度之影響。**研究方法：**本研究對象為就讀於新北市某大學職能治療系之 54 名學生。研究設計包含前測、中測與後測三個階段，分別使用「精神疾病知識評估量表」與「精神疾病污名量表」進行測量。所得數據以 SPSS 20.0 軟體進行統計分析，評估各階段測驗結果之差異。**研究結果：**介入後學生在精神疾病知識方面雖有提升，但未達統計顯著水準；在學生對精神疾病的態度方面，是否接受電影教學介入亦未顯示顯著差異。**結論：**針對職能治療學生而言，電影為基礎之教育介入對精神疾病知識學習雖無顯著成效，但整體分數呈現上升趨勢。此教學策略可能對於精神科職能治療教育具潛在助益，建議未來研究可進一步探討其長期效果與實施方式之優化。

關鍵字：醫學教育、電影教學、職能治療

[1] 輔仁大學職能治療學系

[2] 輔仁大學跨專業長期照護碩士學位學程

[*]通訊作者：施以諾　電子信箱 062161@mail.fju.edu.tw

Submitted February 23, 2026
Final version accepted May 26, 2026.

Cite as: Chien-Ju Chou, Hsun-Hao Chang, Yu-Mei Jeng, Meng-Chi Yeh, Chiao-Wen Kuo, Ya-Liang Chang, Chi-Feng Hung
A Preliminary Analysis of the Technology Physical Fitness Test of Employees in a Northern Regional Hospital
Fu-Jen Journal of Medicine 24(2): 10-20, 2026.
DOI: 10.53106/181020932026062402002

Original Research Article

A Preliminary Analysis of the Technology Physical Fitness Test of Employees in a Northern Regional Hospital

Chien-Ju Chou[1,#], Hsun-Hao Chang[2,#], Yu-Mei Jeng[1], Meng-Chi Yeh[3], Chiao-Wen Kuo[1], Ya-Liang Chang[1*], Chi-Feng Hung[4]

[1] Department of Nursing, Taipei City Hospital Heping-Fuyou Branch.
[2] Tainan Municipal Hospital (Managed by Show Chwan Medical Care Corporation).
[3] Department of Family Medicine, Taipei City Hospital, Heping Fuyou Branch.
[4] School of Medicine, Fu Jen Catholic University.
[#]Co-first authors
*Corresponding author. E-mail address:
B0882@tpech.gov.tw (Ya-Liang Chang)
0534317@gmail.com (Chi-Feng Hung)

ABSTRACT

Objective: To explore the differences in various physical fitness indicators among physicians and medical staff, nurses and administrative staff, and to understand the current status of employees' health and physical fitness. ***Methods:*** This cross-sectional descriptive study utilized convenience sampling, entraining a third-party professional organization to conduct technology-based physical fitness assessments at our hospital. A total of 300 valid participants completed the assessments and were evenly divided into three groups based on their occupational categories: physicians and medical personnel (N = 100), nursing staff (N = 100), and administrative staff (N = 100). The assessment dimensions encompassed body composition indicators (including body mass index BMI and waist-to-hip ratio), muscular strength (handgrip strength), flexibility (sit-and-reach test), and cardiorespiratory endurance. Specifically, cardiorespiratory endurance was evaluated using the three-minute progressive in-place knee-lift step test (3MPKS) , which eliminates the spatial limitations of traditional step-up boxes while offering enhanced safety and precision. For inferential statistics, a one-way analysis of covariance (ANCOVA) was employed, with gender, age, and regular exercise habits controlled as covariates to eliminate demographic confounding factors. ***Results:*** After excluding covariate interference, BMI was highest in the administrative group, BMI was highest in the administrative staff group, followed by the nursing staff group and the medical personnel group ($p = 0.001$, partial $\eta^2 = 0.042$). The effect size approached the moderate range. For sit-and-reach performance, the medical personnel group performed best, followed by the administrative staff group and the nursing staff group ($p = 0.020$, partial $\eta^2 = 0.025$), with a small-to-moderate effect size. No significant differences were observed in handgrip strength ($p = 0.510$, partial $\eta^2 = 0.005$), cardiorespiratory endurance

(p = 0.770, partial η^2 = 0.002), or waist-to-hip ratio (p = 0.070) after adjustment. The effect sizes for these indicators were small. However, the waist-to-hip ratio showed a marginal trend toward statistical significance (p = 0.070, partial η^2 = 0.018). Norm comparison revealed that men had the most frequent rating of "poor" in flexibility, while both men and women had the most frequent rating of "poor" in cardiorespiratory endurance. ***Conclusion:*** This study uses an innovative, simple, and safe method to assess the physical fitness of hospital employees to enhance their willingness to participate, which helps employees manage their own health. After excluding the interference of demographic variables, there are still significant differences in body composition and flexibility among employees of different occupations. This study can also serve as a reference for medical institutions to promote workplace health promotion strategies. It is recommended to design individualized intervention programs for different occupations and genders to enhance cardiorespiratory endurance and flexibility, thereby improving overall health and physical fitness performance.

Keywords: Hospital staff, Occupational health

INTRODUCTION

With the evolving concept of corporate health management, workplace health promotion is gradually shifting from "treatment administered following disease screening" to a "prevention-oriented" approach, emphasizing health promotion as its core concept. Medical institutions are increasingly incorporating employee physical fitness assessments as a significant measure in health management. Through fitness evaluations, potential health risks can not only be preliminarily screened, but they also aid in enhancing employees' self-awareness of health and guiding subsequent health behaviors, thereby achieving the goals of promoting health and preventing diseases[1].

However, there remains a clear research gap in the existing literature. Empirical studies that systematically assess technology-based physical fitness among hospital employees and examine gender differences are still limited. Most related studies have focused on traditional physical fitness assessments or specific occupational groups (e.g., nursing staff), leaving the quantitative understanding of the overall health status of hospital employees incomplete. Therefore, to effectively promote health policies, there is a need for further clarification on the physical fitness and assessment dimensions of employees in different occupational categories[2].

Physical fitness can be divided into performance-related athletic fitness and health-related physical fitness. The latter includes aspects such as cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition, serving as crucial indicators of an individual's health status and quality of life. Multiple domains of health-related physical fitness are likewise linked to work ability, functional living abilities, and disease risk. Consequently, an increasing number of medical institutions are incorporating health-related physical fitness into regular health management processes[2,3].

The working environment in healthcare institutions is often characterized by high stress and heavy occupational demands. Hospital employees may be required to work rotating shifts, stand for prolonged periods, or perform computer-based tasks for extended durations. These work patterns may contribute to insufficient physical activity and irregular daily routines. Over time, such conditions may be associated with increased risks of obesity, cardiovascular disease, and low back pain. Medical staff are more likely to experience generalized musculoskeletal strain, whereas administrative staff may be more prone to localized chronic overuse injuries[4,5,6]. Therefore, systematic physical fitness assessment and analysis can help hospitals better understand the current health status of their employees and develop individualized health promotion strategies.

The integration of smart fitness testing technology has become a widespread trend across healthcare settings. These assessments

combine tools such as the InBody body composition analyzer, progressive in-place knee-lift step test, grip strength test, and sit-and-reach test to rapidly evaluate employees' cardiovascular function, muscular strength, and flexibility performance. By providing quantified data, these assessments offer real-time feedback to facilitate self-management and tracking of healthy behaviors.

This study conducted technology-based physical fitness assessments between June and July 2025 at a regional hospital in Northern Taiwan. Out of a total workforce of 866 employees **(683 females and 183 males)**, 339 participated, with 300 completing the full assessment (a completion rate of 88.4%).

Female participants accounted for 82% of the sample. This high proportion not only reflects the female-dominated labor structure of Taiwan's healthcare industry but also aligns with previous research suggesting higher engagement in health-promotion activities among women[7]. Given that this demographic imbalance—particularly in gender and age—could introduce statistical confounding when comparing different professional roles (e.g., the high concentration of females in nursing), this study controlled for demographic variables to accurately identify genuine differences in physical fitness across occupations.

In summary, medical institutions should utilize technology-based physical fitness assessments to establish sustainable health management strategies. Ultimately, this research aims to analyze these fitness outcomes to explore employees' current health status and gender differences, providing an empirical foundation for future workplace health promotion policies within clinical settings.

MATERIALS AND METHODS

Participants

This was a cross-sectional descriptive study using convenience sampling. The participants were current employees of a regional hospital in Northern Taiwan who took part in a technology-based health and fitness assessment program held by the hospital from June 26 to July 2, 2025. This event entrusted the team from the third-party organization "Taipei Medical University Physical Fitness Testing Station" to carry out all the testing items at our hospital. A total of 339 employees participated. After excluding 39 incomplete testing samples, 300 valid samples were finally obtained and classified according to their job responsibilities. The natural distribution of the valid samples was exactly as follows: the medical staff group (including physicians and medical technicians), with a total of 100 people (22 males and 78 females), the nursing staff group with a total of 100 people (3 males and 97 females), and the administrative staff group with a total of 100 people (29 males and 71 females). This study, for the convenience of sampling, did not adopt the deliberate matching or quota sampling process.

Instruments and Assessment Items

The physical fitness assessment consists of the following five components:

Body Composition Indicators: This includes height, weight (to calculate BMI), and waist-to-hip ratio, measured using the InBody 230 body fat analyzer.

Muscle Strength Test: The measurement of muscular strength was conducted using a digital handgrip dynamometer to assess the maximum grip strength of both hands, with the higher value of the two trials recorded as the representative individual measurement for subsequent statistical analysis.

Flexibility Test: The assessment of flexibility was conducted through a sit-and-reach test to measure the range of motion of the trunk and hamstrings, with the maximum distance reached recorded in centimeters (cm) as the individual's flexibility score.

Cardiovascular Endurance Test: The "three-minute progressive in-place knee-lift step test (3MPKS)" is adopted for this assessment. The cardiorespiratory endurance was assessed using a 3-minute progressive knee-lift step test, starting at a cadence of 80 spm (steps per minute) and increasing by 16 spm every 30 seconds, during which participants wore wearable devices to follow a pre-recorded incremental rhythm transitioning from marching to running in place for three minutes, while heart rate data including HR_0 (resting heart rate), HR_1 to HR_3 (exercise heart rate per minute), and HR_4 (recovery heart rate) were synchronously recorded for analysis. This test exhibits acceptable reliability and validity and is widely used in adult fitness assessments[8].

Data Processing and Statistical Analysis

The data collected in this study were analyzed using SPSS for Windows version 27.0. Descriptive statistics were adopted to present the basic sample characteristics along with the mean values and standard deviations of various physical fitness indicators. For inferential statistics, in addition to using One-way Analysis of

Variance (ANOVA) and Chi-square tests to compare the differences in baseline demographic characteristics between groups, Furthermore, for continuous variables such as BMI, waist-to-hip ratio, handgrip strength, sit-and-reach flexibility, and cardiorespiratory endurance, one-way analysis of covariance (ANCOVA) was used, with "gender," "age," and "regular exercise habits" set as covariates to control for these factors. This approach aimed to accurately evaluate the independent associations between job categories and physical fitness as well as body composition. When comparing basic demographic characteristics between groups, Levene's test was first used to examine the assumption of homogeneity of variances. If the homogeneity assumption was violated ($p < .05$), Welch's ANOVA was used for analysis, followed by post hoc testing with Dunnett's T3 method.

For categorical variables (e.g., BMI categories), Chi-square tests were utilized, with the significance level set at $p < .05$, as integrating workplace exercise interventions with health indicator assessments enhances the practical utility and interpretability of the data analysis[9].

RESULTS

The results of this study were compared to the normative scoring stratification for technology-based fitness assessments provided by the iFitness information platform. BMI was defined using categories such as "underweight, normal, overweight, mild obesity, moderate obesity, and severe obesity." The waist-to-hip ratio was classified as "underweight, slightly underweight, normal, slightly overweight, and overweight." Muscle strength, flexibility, and cardiovascular endurance were categorized as "poor, slightly below average, adequate, good, and very good"[10].

DISCUSSION

Implementation Outcomes

1. Comparison of physical fitness among three groups of hospital staff

The youngest participant in this study was 23 years old, while the oldest was 64 years old. Among the three groups of employees, the medical personnel group had the lowest average age,40.55 years. Furthermore, the female proportion within the Nursing Staff group reached as high as 97%, indicating a highly significant difference in gender distribution across the different professional categories (Table 1).

For body composition and physical fitness outcomes (Table 2), ANCOVA was used to control for sex, age, and regular exercise habits, so that the relationship between occupational category and fitness outcomes could be examined more clearly. After adjustment for these covariates, significant between-group differences were found in BMI and sit-and-reach performance. BMI was highest in the administrative staff group, followed by the nursing staff group and the medical personnel group ($p = 0.001$, partial $\eta^2 = 0.042$). The effect size approached the moderate range. For sit-and-reach performance, the medical personnel group performed best, followed by the administrative staff group and the nursing staff group ($p = 0.020$, partial $\eta^2 = 0.025$), with a small-to-moderate effect size. No significant differences were observed in handgrip strength ($p = 0.510$, partial $\eta^2 = 0.005$), cardiorespiratory endurance ($p = 0.770$, partial $\eta^2 = 0.002$), or waist-to-hip ratio ($p = 0.070$) after adjustment. The effect sizes for these indicators were small. However, the waist-to-hip ratio showed a marginal trend toward statistical significance ($p = 0.070$, partial $\eta^2 = 0.018$). The administrative staff group appeared to have a higher risk of central obesity, and this finding deserves further attention.

Regarding the sit-and-reach flexibility test, the nursing group performed the weakest among the three groups. Related domestic studies have also indicated that the health-related physical fitness of hospital employees (especially nurses who frequently need to bend over and lift patients) is highly correlated with the incidence of lower back pain. Insufficient flexibility and overall physical fitness may be associated with an increased risk of musculoskeletal injuries such as lower back pain[11].

2. Comparison of Obesity Prevalence

According to the Ministry of Health and Welfare (MOHW) guidelines defining adult obesity by BMI, participants were categorized into six groups: underweight, normal weight, overweight, mild obesity, moderate obesity, and severe obesity. Among all participants, the normal weight group was the most prevalent, accounting for 57%, followed by overweight (19.0%), mild obesity (11.7%), moderate obesity (8.3%), and severe obesity or underweight (2.0%) (Table 3). A Chi-square test was conducted to analyze the association between professional roles and obesity categories, revealing a statistically significant difference in the distribution across the three groups（$\chi^2 = 23.732$，df $= 10$，$p = 0.008$）. Overall, the combined prevalence of overweight and obesity among the participants is consistent with recent national

statistics in Taiwan. According to the 2017–2020 Nutrition and Health Survey in Taiwan (NAHSIT), approximately 50% of the adult population is classified as either overweight or obese[12].

3. Descriptive analysis of grouped physical fitness performance

Among male employees, those within the normal BMI range constituted 40.7%, while the proportions of those classified as "overweight" and "obese" were nearly equal, at 31.5% and 27.8%, respectively. The waist-to-hip ratio was most commonly found within the "slightly overweight" category (27.8%), with "overweight" individuals accounting for 9.3%, This indicates that some male employees exhibit a distribution of body fat that is concentrated in the upper body, reflecting a risk for abdominal obesity. Regarding handgrip strength, 46.3% of participants scored at or above the "adequate" level; however, 53.7% remained at or below the "slightly below average" (poor) category, reflecting a generally weak distribution of upper-limb muscular strength and indicating significant room for improvement. In the sit-and-reach test (flexibility), approximately 60% of participants were classified as "slightly below average" or "poor," revealing a prevalent lack of flexibility among male participants. Furthermore, in the 3-minute progressive knee-lift step test for cardiorespiratory endurance, 70.4% of the participants were rated as "poor," highlighting an urgent need for aerobic endurance enhancement (Table 4).

Among female employees, 60.6% fell within the normal BMI range, while approximately 37% were classified as "overweight" or "obese," which is lower compared to the 59.3% observed in males. The waist-to-hip ratio for females showed the highest proportion in the "slightly underweight" category (28.1%), with "underweight" individuals reaching 27.6%. Furthermore, "slightly overweight" and "overweight" women accounted for 26.4%, reflecting a polarizing trend. Regarding handgrip strength, the highest proportion of participants fell into the "adequate" category (28.0%), while approximately 22.8% were classified as "slightly below average." In the sit-and-reach test, 58.9% of the participants scored at or below the "slightly below average" level, indicating a prevalent lack of flexibility. The results for cardiorespiratory endurance were consistent with the trends observed in male participants, with as many as 87.8% rated in the "poor" category, reflecting a critical need for substantial enhancement in overall aerobic capacity (Table 5).

CONCLUSIONS

This study finds significant differences in physical fitness performance among medical professionals, nursing staff, and administrative staff at a regional hospital. Specifically, BMI values were significantly higher in the administrative and nursing groups, while the nursing staff exhibited the poorest performance in flexibility (sit-and-reach). Although no significant differences were observed in handgrip strength and cardiorespiratory endurance across the three categories, the overall results indicate that cardiorespiratory fitness is generally weak among all hospital employees. This suggests that enhancing cardiorespiratory endurance should be the primary focus for future employee health promotion initiatives.

The study recommends that healthcare institutions integrate policies and resources to design systematic, structured, and multidimensional health promotion strategies. These interventions should be tailored to the specific needs of different professional roles and genders. For instance, flexibility training should be strengthened for nursing staff to prevent low back pain; weight management programs should be prioritized for administrative staff; and aerobic conditioning courses should be implemented hospital-wide to improve intervention feasibility and outcomes. According to recent systematic reviews, workplace health promotion interventions centered on physical activity can effectively improve employees' body composition, cardiorespiratory endurance, and overall health status, with evidence supporting both their feasibility and positive impact[13]. Furthermore, research emphasizes that incorporating workplace characteristics, standardized execution protocols, and longitudinal follow-up will better achieve the dual goals of individual health improvement and organizational benefits[14].

Suggestion

Although this study provides a comprehensive analysis of physical fitness performance among three groups of hospital employees and utilizes ANCOVA to control for specific confounders, several limitations remain. First, the cross-sectional design only captures fitness status at a single point in time, precluding the determination of causal relationships or longitudinal trends. Second, certain variables—such as work patterns (e.g., shift schedules) and lifestyle habits (e.g., dietary intake, sleep duration)—were not collected, limiting a deeper

analysis of the underlying causes of fitness variations. Third, the assessment criteria relied on national physical fitness norms designed for the general public; these norms do not account for the unique physical demands of healthcare work, such as prolonged standing and frequent patient handling, which may lead to potential bias when interpreting the fitness levels of medical personnel. Fourth, the use of convenience sampling within a single regional hospital in Northern Taiwan may affect sample representativeness and limit the generalizability of the findings to other regions or different levels of healthcare institutions.

Accordingly, future research should consider expanding the sampling scope to include diverse regions and various levels of medical facilities. Adopting a longitudinal follow-up design, supplemented by questionnaires to capture lifestyle factors and occupational stress, and incorporating subjective health assessments and chronic disease histories, would allow for a more profound exploration of the correlation between physical fitness and health risks. Additionally, it is suggested that healthcare institutions utilize these findings to design segmental health promotion interventions tailored to different professional roles. By aligning these programs with shift schedules and facility availability, institutions can enhance the feasibility and sustainability of employee participation.

ACKNOWLEDGMENTS

The author would like to express the most sincere gratitude to the professional team from the Taipei Medical University Physical Fitness Testing Station. Their expertise and dedicated on-site execution of the technology-based fitness assessments significantly enhanced the objectivity and reliability of the data collected in this study.

REFERENCES

1. 杜宗禮、鄭宇婷、陳信永、李政撤（2020）．某區域醫院輪三班醫療工作者體適能分析．*中華職業醫學雜誌，27*(4)，249–258。https://www.airitilibrary.com/Article/Detail?DocID=10233660-202010-202011050004-202011050004-249-257
2. 許其揚、蔡永裕、林品伶（2010）．中部某區域醫院員工之健康體適能分析．*澄清醫護管理雜誌，6*(3)，18–23。https://doi.org/10.30156/CCMJ.201007.0002
3. Leso, V., et al. (2023). Association between health related physical fitness indicators and work ability: A systematic review. *Journal of Occupational Health, 66*(1), uiad006. https://doi.org/10.1093/JOCCUH/uiad006
4. 蔡明足、沈玉卿、翁林仲、吳宗燕（2008）．某區域醫院員工健康體適能之分析．*北市醫學雜誌，5*(1)，102–113。https://doi.org/10.6200/TCMJ.2008.5.1.10
5. 蕭君婷、孫嘉璟、孫惠玲、鄭鈺鄙、劉翠瑤（2021）．探討醫院員工健康體適能與下背痛之相關因素．*北市醫學雜誌，18*(2)，213–226。https://doi.org/10.6200/TCMJ.202106_18(2).0011
6. Matuszewska, M., Rypicz, Ł., Witczak, I., & Kołcz, A. (2025). The occupational dimension of musculoskeletal disorders: A comparison of healthcare workers and administrative staff using the NMQ-E tool. *Journal of Clinical Medicine*, *14*(17), 6187. https://doi.org/10.3390/jcm14176187
7. Pohjola,V., Suni, J.H., Husu, P., et al. (2024). Association between physical fitness and perceived work ability. *Journal of Occupational Health*, *97,451-460*. https://doi.org/10.1007/s00420-024-02058-y
8. Li, F., Chang, C.-H., & Ho, C.-A. (2022). The determination of step frequency in 3-min incremental step-in-place tests for predicting maximal oxygen uptake from heart rate response in Taiwanese adults. I*nternational Journal of Environmental Research and Public Health, 19*(1), 563. https://doi.org/10.3390/ijerph19010563
9. Prieske, O., et al. (2015). Workplace exercise and educational programme for improving fitness outcomes related to health in workers: A randomized controlled trial. *Journal of Occupational and Environmental Medicine, 57*(3), 235–240. https://doi.org/10.1097/JOM.0000000000000000393
10. 運動部體育署（2024）．*i 運動資訊平台：科技檢測體適能年齡分層評分常模*。取自 https://gov.tw/YWX
11. Chasandra, A., Karatrantou, K., Papazeti, K., et al. (2025). Measurement and Evaluation of Health, Functional Capacity,

Physical Fitness, and Daily Habits of Greek Female Healthcare Professionals Working in a Hospital Environment. *Healthcare, 13*(4), 383. https://doi.org/10.3390/healthcare13040383

12. 衛生福利部國民健康署（2022）. *第七期國民健康促進計畫*（2021– 2025）。https://www.hpa.gov.tw/Pages/Detail.aspx?nodeid=3999&pid=11145
13. Zhang, S., Nie, M., Peng, J., & Ren, H. (2025). Effectiveness of physical activity-led workplace health promotion interventions: A systematic review. *Healthcare, 13*(11), 1292. https://doi.org/10.3390/healthcare13111292
14. Schaller, A., Stassen, G., Baulig, L., & Lange, M. (2024). Physical activity interventions in workplace health promotion: Objectives, related outcomes, and consideration of the setting—a scoping review of reviews. *Frontiers in Public Health, 12*, 1353119. https://doi.org/10.3389/fpubh.2024.1353119

TABLES

Table1. Baseline Characteristics of Hospital Employees across Groups

	Physicians and Medical Personnel (N=100)	Nursing Staff (N=100)	Administrative Staff (N=100)	F Value	p Value	Post hoc
Age (years)	40.55±9.59	40.73±11.74	45.76±11.25	7.36	0.001	c > a, b
Height (cm)	162.06±7.89	158.27±6.08	162.27±7.28	9.49	<0.001	a, c > b
Weight (kg)	60.81±10.10	60.8±10.81	67.21±14.627	9.99	<0.001	c > a, b

a: Physicians and Medical Personnel , b: Nursing Staff , c: Administrative Staff

Note: Values are presented as the original mean ± standard deviation (Mean ± SD). Prior to comparing demographic characteristics between groups, Levene's test indicated a violation of the homogeneity of variance assumption ($p < .05$). Therefore, Welch's ANOVA was used for analysis, followed by post hoc comparison using Dunnett's T3 method.

Table2. Differences in Physical Fitness Components Among Hospital Personnel by Department

Physical Fitness Components	Physicians a and Medical Personnel (N=100)	Nursing Staff b (N=100)	Administrative c Staff (N=100)	F Value	p Value	Partial η²	Compare
BMI (kg/m²)	23.11 ± 0.40	24.63 ± 0.41	25.06 ± 0.41	6.5	0.00	0.042	c > b > a
Cardiovascular Endurance	48.42 ± 0.61	48.05 ± 0.62	47.79 ± 0.62	0.26	0.77	0.002	a > b > c
Flexibility	28.38 ± 0.93	24.76 ± 0.95	26.24 ± 0.95	3.76	0.02	0.025	a > c > b
Grip Strength	29.18 ± 0.49	28.53 ± 0.51	29.32 ± 0.51	0.67	0.51	0.005	c > a > b
waist-to-hip ratio	0.80 ± 0.01	0.82 ± 0.01	0.82 ± 0.01	2.75	0.07	0.018	b = c > a

A. Physicians and Medical Personnel
B. Nursing Staff
C. Administrative Staff

Table3. Distribution of Obesity Categories Among Hospital Staff by Group

BMI Category	Physicians and Medical Personnel (N=100)	Nursing Staff (N=100)	Administrative Staff (N=100)	Total (N=300)
Underweight(<18.5)	2 (2.0%)	3 (3.0%)	1 (1.0%)	6 (2.0%)
Normal(18.5 ≤BMI < 24)	66 (66.0%)	53 (53.0%)	52 (52.0%)	171 (57.0%)

BMI Category	Physicians and Medical Personnel (N=100)	Nursing Staff (N=100)	Administrative Staff (N=100)	Total (N=300)
Overweight(24 ≤ BMI < 27)	20 (20.0%)	22 (22.0%)	15 (15.0%)	57 (19.0%)
Mild Obesity (27 ≤ BMI < 30)	10 (10.0%)	14 (14.0%)	11 (11.0%)	35 (11.7%)
Moderate Obesity (30 ≤ BMI < 35)	2 (2.0%)	6 (6.0%)	17 (17.0%)	25 (8.3%)
Severe Obesity(≥ 35)	0 (0.0%)	2 (2.0%)	4 (4.0%)	6 (2.0%)

Values are presented as counts (%)

Table4. Physical Fitness Profiles of Male Hospital Staff (N=54)

Measurement	Underweight	Normal Weight	Overweight	Mild Obesity	Moderate Obesity	Severe Obesity
BMI (kg/m²)	0 (0.0%)	22 (40.7%)	17 (31.5%)	7 (13.0%)	6 (11.1%)	2 (3.7%)
	Underweight	Slightly Underweight	Normal	Slightly Overweight	Overweight	
Waist-to-Hip Ratio	10 (18.5%)	11 (20.4%)	13 (24.0%)	15 (27.8%)	5 (9.3%)	-
	poor	slightly below average	adequate	good	very good	
Grip Strength(kg)	17(31.5%)	12(22.2%)	13(24.1%)	4(7.4%)	8(14.8%)	
Flexibility(cm)	20(37.0%)	12(22.2%)	10(18.5%)	8(14.9%)	4(7.4%)	
Cardiovascular Endurance	38(70.4%)	8(14.8%)	6(11.1%)	2(3.7%)	0(0.0%)	-

Values are presented as counts (%)

Table5. Physical Fitness Profiles of Female Hospital Staff (N=246)

Measure-ment	**Under-weight**	**Normal Weight**	**Over-weight**	**Mild Obe-sity**	**Moderate Obesity**	**Severe Obesity**
BMI (kg/m^2)	6(2.4%)	149(60.6%)	40(16.3%)	28(11.4%)	19(7.7%)	4(1.6%)
	Under-weight	Slightly Un-derweight	Normal	Slightly Over-weight	Over-weight	
Waist-to-Hip Ratio	68(27.6%)	69(28.1%)	44(17.9%)	43(17.5%)	22(8.9%)	-
	poor	slightly be-low average	adequate	good	very good	
Grip Strength(kg)	23(9.4%)	56(22.8%)	69(28.0%)	49(19.9%)	49(19.9%)	
Flexibil-ity(cm)	70(28.4%)	75(30.5%)	44(17.9%)	33(13.4%)	24(9.8%)	
Cardiovas-cular Endur-ance	216(87.8%)	17(6.9%)	6(2.4%)	6(2.4%)	1(0.4%)	-

Values are presented as counts (%)

A Preliminary Analysis of the Technology Physical Fitness Test of Employees in a Northern Regional Hospital

北部某區域醫院員工之科技體適能初探分析

周倩如[1#] 張洵浩[2#] 鄭鈺鄙[1] 葉孟奇[3] 郭巧雯[1] 張雅量[4*]

洪啓峯[4*]

中文摘要

目的：探討醫師及醫事組、護理組及行政組之體適能各項指標之差異，並了解員工之健康體適能現況。**方法：**本研究採橫斷性調查與便利抽樣，委託第三方專業機構至本院進行科技體適能檢測。有效樣本共 300 位，依職類分為醫師及醫事人員、護理人員與行政人員各 100 位。檢測構面涵蓋身體組成（含 BMI 與腰臀比）、肌力（握力）、柔軟度（坐姿體前彎）與心肺耐力。其中心肺耐力採用「三分鐘漸進式原地抬膝踏步測驗（3MPKS）」，免除傳統登階箱之場地限制，兼具安全性與精準度。統計分析採用單因子共變數分析（ANCOVA），控制性別、年齡與規律運動習慣等人口統計干擾變項。**結果：**排除共變量干擾後，不同職類員工在身體質量指數（BMI）與柔軟度上仍具顯著差異：BMI：行政組>護理組>醫事組(p=0.001 , *Partial* η^2= 0.042)，具接近中等之效應量，坐姿體前彎：醫事組>行政組>護理組（p= 0.020 , *Partial* η^2= 0.025），屬小至中等效應量，此兩項檢測數值在三組間具有顯著之組間差異。另外，手握力(p=0.510, *Partial* η^2= 0.005)、心肺耐力 (p=0.770, *Partial* η^2= 0.002)，與腰臀比(p=0.070)在控制變項後無顯著差異，且效果量極低，但腰臀比(p=0.070 ,*Partial* η^2= 0.018)已呈現統計學上之邊緣顯著（Marginally Significant）趨勢，且具備小效應量。比對常模後發現，男性柔軟度以「不好」最多，男女性在心肺耐力皆以「不好」居多。**結論：**本研究採用創新簡易又安全的方法檢測醫院員工之體適能以提升參與意願，有助於員工自我健康管理，排除人口統計變數干擾後，不同職類員工之身體組成與柔軟度仍具顯著差異，亦可做為醫療機構推動職場健康促進策略之參考，建議針對不同職類與性別設計個別化介入方案，強化心肺耐力與柔軟度之改善，提升整體健康體適能表現。

關鍵字：體適能、醫院員工

[1] 臺北市立聯合醫院和平婦幼院區護理科

[2] 台南市立醫院(委託秀傳醫療社團法人經營)

[3] 臺北市立聯合醫院和平婦幼院區家庭醫學科

[4] 輔仁大學跨專業長期照護碩士學位學程

[#]共同第一作者

[*]通訊作者：張雅量　電子信箱 B0882@tpech.gov.tw

[*]通訊作者：洪啓峯　電子信箱 054317@gmail.com

Chien-Ju Chou, Hsun-Hao Chang, Yu-Mei Jeng, Meng Chi Yeh, Chiao-Wen Kuo, Ya-Liang Chang, Chi-Feng Hung

Submitted November 04, 2025.
Final version accepted December 24, 2025.

Cite as: Mei-Hsin Ho, Jui-Hsiu Tsai Psychological Resilience in Mental Health: A Concept Analysis Fu-Jen Journal of Medicine 24(2): 21-36, 2026.
DOI: 10.53106/181020932026062402003

Review Article

Psychological Resilience in Mental Health: A Concept Analysis

Mei-Hsin Ho[1], Jui-Hsiu Tsai[2,3*]

[1] Department of Medical Research, Dalin Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation

[2] Department of Psychiatry, Dalin Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation

[3] School of Medicine, Hualien Tzuchi University

* Corresponding author. E-mail address: faanvangogh@gmail.com (Jui-Hsiu Tsai)

ABSTRACT

***Purpose**:* To clarify the concept and defining attributes of psychological resilience within the mental health context and provide a theoretical foundation for future research, assessment, and clinical practice. ***Design**:* A concept analysis. ***Methods**:* Walker and Avant's eight-step concept analysis method was applied. Relevant theoretical and empirical literature published between 2015 and 2025 was retrieved from the PubMed, Ovid, CINAHL, and PsycINFO databases. The defining attributes, antecedents, consequences, empirical referents, and illustrative cases of psychological resilience were identified and analyzed. ***Results**:* Three defining attributes of psychological resilience were identified: psychological and emotional stability under adversity, mobilization of internal and external resources for adaptive coping, and restoration and growth following adversity. Antecedents included individual, interpersonal, and environmental factors that support resilience development. Consequences comprised clinical, psychological, and social outcomes, including symptom stabilization, emotional well-being, functional recovery, and improved quality of life. Empirical referents included validated resilience instruments and related indicators that assess adaptive coping, emotional regulation, and recovery outcomes. ***Conclusion**:* Psychological resilience is a dynamic and multidimensional process that enables individuals to adapt positively and recover from adversity. Clarification of this concept provides a theoretical foundation for the development of assessment tools and clinical interventions, thereby contributing to the promotion of mental health and recovery-oriented care.

Keywords: psychological resilience, concept analysis, mental health, recovery-oriented care

INTRODUCTION

Psychological resilience, defined as the ability to maintain or regain psychological balance in the face of adversity, chronic stress, or psychiatric illness, has become a central construct in contemporary mental health research. This concept reflects a broader movement from disease-centered models to recovery-oriented approaches that emphasize empowerment, adaptation, and meaning-making. Within this framework, resilience is not merely resistance to stress but a dynamic process that enables individuals to sustain emotional stability, purpose, and hope despite ongoing psychological or social challenges[1,2].

Between 2015 and 2025, research on psychological resilience has expanded across psychology, psychiatry, neuroscience, and nursing. This growth has been driven by increasing psychological stressors, the growing prevalence of chronic mental health conditions, and the demand for recovery-oriented care. Empirical findings show that individuals with higher resilience exhibit better emotional regulation, treatment adherence, and overall functioning[3-5], while lower levels of resilience are associated with heightened distress, impaired functioning, and increased vulnerability to relapse[6-9].

Despite its growing relevance, the concept of psychological resilience remains theoretically diverse. Across disciplines, it has been conceptualized as a personal trait, an adaptive process, or an outcome of recovery[1,10,11]. Such variability complicates its operationalization and the integration of resilience into clinical practice. Contemporary theoretical frameworks increasingly conceptualize resilience as a dynamic, context-dependent, and multisystemic construct shaped by interacting biological, psychological, and social mechanisms[12,13].

The COVID-19 pandemic further highlighted the multidimensional and culturally contextual nature of resilience, emphasizing its role in buffering prolonged psychological stress and fostering post-traumatic growth[14,15]. Beyond individual-level adaptation, organizational and systemic factors such as supportive leadership and team-based care have also been shown to strengthen resilience among healthcare professionals and patients[16,17].

Given these conceptual variations and the expanding body of evidence, a systematic concept analysis is necessary to clarify the essential attributes, antecedents, and consequences of psychological resilience. Therefore, this study employs Walker and Avant's (2019) eight-step method to analyze psychological resilience within the context of mental health[18]. By reviewing theoretical and empirical literature published between 2015 and 2025, this analysis aims to enhance conceptual clarity, identify defining attributes, and determine empirical referents that may guide assessment, intervention development, and recovery-oriented mental health care.

METHODS

Concept Analysis Method

Walker and Avant's (2019) concept analysis method was employed to examine the concept of psychological resilience within the context of mental health[18]. This method provides a systematic and rigorous approach for clarifying conceptual meaning and practical boundaries and consists of eight analytical steps:(1) selecting the concept;(2) determining the aims or purposes of the analysis;(3) identifying all possible uses of the concept; (4) determining the defining attributes;(5) identifying a model case;(6) identifying borderline, related, contrary, invented, and illegitimate cases;(7) identifying antecedents and consequences, and(8) defining empirical referents. This structured framework facilitates a comprehensive understanding of the essential characteristics, boundaries, and practical applications of psychological resilience in mental health care settings.

Data Sources

A systematic literature review was conducted to identify theoretical and empirical developments related to psychological resilience in mental health research. Four electronic databases (PubMed, CINAHL, Ovid, and PsycINFO) were systematically searched for peer-reviewed articles published between 2015 and 2025. The search strategy included combinations of the keywords: "psychological resilience," "resilience," and "concept analysis." The PRISMA 2020 checklist was used to guide reporting and ensure transparency in the review process. Articles were included if they (1) provided an explicit conceptual definition, theoretical explanation, or analytical description of psychological resilience; (2) were empirical or theoretical studies in which resilience was a primary construct of interest; and (3) were peer-reviewed, published in English, and available in full text. Studies were excluded if they (1) mentioned resilience only superficially and lacked conceptual discussion, (2) treated resilience solely as a covariate without defining or analyzing it, (3) focused exclusively on intervention

outcomes without addressing the concept of resilience, or (4) were commentaries, opinion papers, conference abstracts, or dissertations.

Study Selection and Reviewer Reliability

Two independent reviewers conducted title/abstract and full-text screening using a standardized form. Inclusion and exclusion criteria were operationalized using predefined definitions to ensure consistency and reproducibility. For example, articles classified as "conceptually discussing psychological resilience" were required to include an explicit theoretical definition, conceptual explanation, analytical description, or identification of defining attributes of psychological resilience, rather than merely mentioning resilience incidentally. Studies were excluded if they referred to resilience only superficially, used resilience solely as a control variable or covariate without conceptual elaboration, or focused exclusively on intervention outcomes without defining the underlying construct. Inter-rater reliability, assessed using Cohen's kappa, indicated substantial agreement at both stages (title/abstract: $\kappa = .82$; full-text: $\kappa = .86$). Discrepancies were resolved through discussion until consensus was reached. A detailed narrative of screening procedures is presented in the Results section alongside the PRISMA flow diagram.

Data Extraction and Analysis

A structured data extraction form was developed a priori to capture key conceptual elements of psychological resilience, including definitions, theoretical foundations, conceptual uses, defining attributes, antecedents, consequences, and empirical referents. Two reviewers independently extracted all relevant information from the included studies and compared their extraction forms. Any discrepancies were resolved through discussion to ensure accuracy and consistency. Consistent with the purpose of concept analysis, no formal quality appraisal was performed; however, the methodological characteristics of each study were documented to enhance transparency.

All textual segments pertinent to psychological resilience were analyzed using a thematic synthesis approach. First, two reviewers conducted line-by-line inductive coding to generate initial codes representing core conceptual ideas. These codes were iteratively refined and compiled into a shared codebook. Coding disagreements were resolved through discussion, with a third reviewer available for adjudication if necessary.

Initial codes were then grouped into focused codes through constant comparison to identify recurring conceptual patterns across studies. These focused codes were subsequently subjected to deductive refinement based on Walker and Avant's (2019) concept analysis framework, ensuring that each code appropriately aligned with emerging defining attributes, antecedents, and consequences.[18] This combined inductive–deductive strategy supported both data-driven interpretation and theoretical coherence.

To enhance analytic transparency, Supplementary Table 1 provides the complete data extraction summary for all included studies, while Supplementary Table 2 illustrates examples of the coding process. For instance, the statement "individuals who stay emotionally balanced in stressful situations recover more effectively" was coded as emotional regulation under stress, contributing to the defining attribute of psychological and emotional stability under adversity. Likewise, the description "resilient people draw on both personal strengths and social resources when facing challenges" was coded as internal and external resource mobilization, informing the attribute mobilization of internal and external resources for adaptive coping.

Following thematic synthesis, model, borderline, related, and contrary cases were developed to illustrate varying expressions of the defining attributes and to clarify conceptual boundaries. Empirical referents were analyzed to determine how psychological resilience has been operationalized and measured across studies, consistent with Walker and Avant's approach to identifying observable indicators of a concept.

RESULTS

The database search identified 1,462 records. After removal of 24 duplicates, 1,438 records underwent title and abstract screening. Of these, 1,392 articles were excluded for not meeting the inclusion criteria, including a lack of conceptual clarity, failure to focus on psychological resilience, or inclusion of non-mental-health populations.

A total of 46 full-text articles were assessed for eligibility. Among these, 20 articles were excluded because they lacked conceptual analysis, treated resilience solely as a covariate, focused exclusively on intervention outcomes without conceptual discussion, or were not related to mental health populations. Ultimately, 26 studies met all inclusion criteria and were included in the final concept analysis (Figure 1).

Articles excluded during the title and abstract screening stage primarily mentioned resilience only superficially or did not involve mental health populations. Full-text exclusions mainly occurred when studies lacked conceptual content

or did not adequately address psychological resilience as the primary construct of interest.

Uses of the Concept (Step 3)

Across disciplines, psychological resilience has been widely used to describe an individual's capacity to withstand, adapt to, and recover from adversity. In clinical psychiatry, resilience refers to the ability to maintain emotional and functional stability during periods of psychological distress, prevent relapse, and sustain self-management and recovery efforts despite persistent symptoms[1,2]. It is conceptually distinct from coping and recovery; rather, it encompasses a broader adaptive capacity that integrates emotional regulation, cognitive flexibility, and social connectedness, thereby supporting continued treatment engagement and psychosocial growth[5,10].

Beyond the clinical context, resilience is increasingly recognized as a culturally and contextually embedded construct that manifests differently across societies depending on collective norms, family systems, and cultural meaning-making processes[11,15]. In developmental and lifespan psychology, resilience is often conceptualized as a dynamic process that unfolds through adaptive mechanisms shaped by early life experiences and cumulative exposure to adversity[2,12]. Overall, psychological resilience represents a multidimensional, dynamic, and context-dependent phenomenon that extends beyond trait-based definitions, emphasizing ongoing adaptation and growth throughout mental health trajectories.

Defining Attributes (Step 4)

Based on the literature reviewed, three core defining attributes of psychological resilience were identified (as shown in Supplementary Table 1). In Walker and Avant's (2019) framework, defining attributes represent the essential characteristics that consistently appear across uses of the concept and distinguish it from related constructs[18]. The three defining attributes identified in this analysis are:

1. Psychological and emotional stability under adversity: Resilient individuals maintain cognitive control and emotional balance when confronted with stress, illness, or traumatic events. This capacity reflects adaptive emotion regulation, attentional flexibility, and functional neurobiological responses that prevent escalation into psychological dysregulation[1,5,10,19,21].

2. Mobilization of internal and external resources for adaptive coping: Resilience involves the ability to draw on internal strengths (e.g., self-efficacy, optimism, problem-solving, mindfulness) and external supports (e.g., family, peers, community, healthcare providers) to meet situational demands. This mobilization enhances coping, fosters meaning-making, and supports sustained adaptation[3,14,22,23,24].

3. Restoration and growth following adversity: Beyond short-term coping, resilience includes recovery of psychological functioning and the capacity for positive transformation, such as renewed purpose, improved functioning, or post-adversity growth. This process reflects reorganization, meaning reconstruction, and increased adaptive capacity[2,11,12, 13,25,26].

Identify a Model Case (Step 5)

Ms. L, a 32-year-old woman diagnosed with schizophrenia at age 24, experiences occasional auditory hallucinations and anxiety when under stress. Through consistent adherence to medication, weekly cognitive-behavioral therapy, and participation in a community mindfulness program, she has developed strong emotional regulation skills. When early signs of relapse occur, she practices grounding techniques and seeks timely support from her therapist. Ms. L also maintains close contact with her family and participates in a peer-support group. Despite her chronic condition, she sustains part-time employment as a library assistant and expresses optimism about her personal growth. Her ability to remain emotionally stable, mobilize both internal and external resources, and achieve psychological growth following adversity exemplifies all defining attributes of resilience.

Identify Borderline, Related, Contrary Cases (Step 6)

Borderline case

Mr. A, a 40-year-old man with recurrent major depressive disorder, attends psychotherapy irregularly and occasionally uses journaling or relaxation techniques to manage stress. During periods of low mood, he tends to isolate himself, neglects daily self-care, and occasionally misses his medication doses. Although he understands the importance of support from his wife and therapist, he often withdraws emotionally and finds it difficult to maintain consistent engagement. Mr. A demonstrates only partial resilience because he is aware of helpful coping strategies yet struggles to apply them consistently and maintain emotional stability.

Related case

Ms. T, a 29-year-old woman diagnosed with generalized anxiety disorder, successfully completes a structured cognitive-behavioral (CBT) program and reports a significant reduction in anxiety symptoms. She resumes her daily routines

and returns to work as a nurse but describes her improvement primarily as "getting back to normal" rather than experiencing personal growth or finding new meaning through her challenges. Although Ms. T demonstrates recovery and functional restoration, her adaptation does not include the transformative growth or active mobilization of resources that define resilience. Thus, this case is related to, but distinct from, true psychological resilience.

Contrary case

Mr. K, a 45-year-old man with bipolar disorder, discontinued his medication following a recent relapse and refuses to attend follow-up appointments. He isolates himself from family and friends, spends most of his time in bed, and expresses persistent feelings of hopelessness and worthlessness. When others encourage him to seek help, he responds with anger and denial, stating that "nothing can help me anymore." Mr. K's behavior reflects an absence of emotional regulation, ineffective use of coping resources, and a lack of recovery-oriented thinking, which together illustrate a complete lack of resilience.

Identify Antecedents and Consequences (Step 7)

Walker and Avant (2019) described antecedents as events or conditions that must occur prior to the emergence of a concept. Based on the literature review, the antecedents, defining attributes, and consequences of psychological resilience were identified and synthesized[18] (see Figure 2).

Antecedents

At the individual level, key precursors of psychological resilience include self-efficacy, optimism, emotional regulation, and metacognitive awareness, factors consistently associated with improved stress adaptation and recovery among individuals with mental health conditions[1,3]. Individuals who recognize early warning signs of relapse and employ strategies such as mindfulness or cognitive restructuring further demonstrate these adaptive capacities[27,28]. Interpersonal antecedents primarily involve social support from family members, peers, and therapeutic alliances, all of which buffer psychological distress and promote sustained engagement in care[17,24,25]. Supportive communication within family systems and consistent encouragement from clinicians can enhance motivation and reinforce treatment adherence[6,14]. At the **environmental level**, antecedents include accessible and recovery-oriented mental health services, community-based programs, and healthcare environments that prioritize patient empowerment and continuity of care[29,30]. Institutional factors such as interdisciplinary collaboration, supportive leadership, and psychologically safe work environments also strengthen resilience among both patients and healthcare professionals[19,31]. Beyond these individual, interpersonal, and institutional influences, contemporary resilience theory emphasizes the multisystemic nature of resilience. This perspective highlights that resilience emerges through dynamic interactions across personal, relational, community, and broader environmental systems[19,32,33]. These interconnected systems shape access to social capital, cultural norms, environmental resources, and structural supports, which collectively influence how individuals interpret adversity and what coping strategies are available. Together, these antecedents form a multidimensional foundation enabling individuals to mobilize internal and external resources when confronting chronic psychological adversity.

Consequences

Clinically, individuals with higher levels of psychological resilience tend to achieve better symptom stabilization and functional recovery, exhibit higher medication adherence[34], and experience lower relapse rates[35]. Psychologically, resilience contributes to enhanced self-efficacy, hope, and emotional balance, as well as positive meaning reconstruction following adversity[5,15,22,32]. These outcomes reflect post-adversity growth and align with the dynamic recovery trajectories observed in longitudinal resilience models[2,12]. Socially, resilience supports functional reintegration, sustained employment, and improved quality of life, as individuals resume social roles and engage meaningfully within their communities[11,25,36,37]. Conversely, low resilience, as illustrated in borderline or contrary cases, correlates with treatment disengagement, emotional withdrawal, and diminished recovery outcomes[8,9]. In addition, higher resilience has been associated with more stable daily functioning and greater capacity to maintain long-term well-being, supporting sustained recovery across diverse mental health contexts. Thus, resilience not only mitigates the impact of mental illness but also fosters long-term adaptation and post-adversity growth, reinforcing its central role in promoting recovery and long-term psychological well-being among individuals with mental health conditions[38,39,40].

Empirical Referents (Step 8)

Empirical referents of psychological resilience have been primarily established through validated self-report instruments, most notably the Connor–Davidson Resilience Scale (CD-RISC)[41], the Resilience Scale for Adults (RSA)[42], and the Brief Resilience Scale (BRS)[43]. Contemporary psychometric research published between 2015 and 2025 provides evidence supporting their reliability and validity, including evidence of structural validity, criterion validity, and cross-cultural applicability[44,45]. Recent literature has also emphasized the importance of psychometrically robust measures across developmental stages and clinical contexts, including child, adolescent, and nursing populations[33,46]. The CD-RISC has undergone extensive psychometric evaluation across both clinical and community samples. Numerous studies have reported strong internal consistency (commonly α = .85–.92) and demonstrate criterion validity through associations with stress tolerance, emotional regulation, and adaptive functioning 44. However, factor-analytic findings have varied across samples and instrument versions, with culturally specific factor patterns reported in some populations[33,45]. The RSA demonstrates sound construct validity for assessing interpersonal, contextual, and environmental aspects of resilience. Empirical investigations generally support its multidimensional factor structure and high test–retest reliability (typically > .80). Cross-cultural evaluations indicate overall robustness, although some studies note differences in factor-level performance across populations, suggesting partial rather than universal measurement invariance[45,46]. The BRS, designed to assess individuals' capacity to "bounce back" from stress, typically exhibits a stable unidimensional structure supported by multiple factor analytic studies. Internal consistency values commonly range from .80 to .90, with convergent validity demonstrated through correlations with emotional stability, coping capacity, and psychological well-being. Measurement invariance across gender, age, and cultural groups has been supported in several studies, although findings have not been entirely consistent across all populations[33,45]. Synthesizing evidence across instruments, evaluations generally indicate strong structural validity, criterion validity, and promising cross-cultural performance, supporting the overall psychometric robustness of these instruments while also highlighting the need for further large-scale, multi-group analyses[9,17,33,44-46].

Beyond self-report measures, neurobiological and physiological indicators such as resting-state functional connectivity and heart-rate variability (HRV), have emerged as complementary indicators of resilience reflecting adaptive neurophysiological regulation under stress[21]. Intervention studies, including mindfulness-based programs, cognitive-behavioral therapy, and resilience-enhancement training, further support the modifiability of resilience, with improvements in resilience scores providing empirical evidence of measure validity and clinical sensitivity[47-49].

DISCUSSION

This concept analysis clarifies the essential features of psychological resilience and addresses the conceptual variability highlighted in prior literature. The findings suggest that resilience is a multidimensional and dynamic process involving emotional, cognitive, and behavioral regulation that enables adaptation and recovery. Research over the past decade has increasingly shifted from trait-based definitions to systemic perspectives that emphasize neurobiological, psychological, and social mechanisms[1,2,26]. The model case illustrates this trajectory, demonstrating how individuals maintain stability, mobilize resources, and experience growth following adversity. Empirical evidence likewise supports conceptualizing resilience as a continuously evolving capacity shaped by context and time[12,13], underscoring the need for measurement approaches that capture both stable and dynamic components[4,21].

The defining attributes identified in this analysis—emotional regulation, resource mobilization, and post-adversity growth—align with recovery-oriented and biopsychosocial models in modern psychiatry. These attributes extend traditional conceptualizations of resilience beyond coping or recovery, highlighting its ongoing and relational nature. This interpretation is consistent with contemporary multisystem models integrating neurobiological and psychosocial processes that influence mental health outcomes[2,5].

Clinically, conceptualizing resilience as a modifiable and context-sensitive process reinforces its relevance for mental health practice. Mindfulness-based interventions, resilience training, and integrative psychosocial programs have demonstrated beneficial effects on emotional regulation, stress reduction, and functional recovery[47-50]. Promoting resilience in mental health settings further requires interdisciplinary collaboration among psychiatrists, psychologists, nurses, and social workers to integrate pharmacological, psychotherapeutic, and social interventions[24,29].

Future research should adopt longitudinal and culturally sensitive approaches to examine how resilience evolves across time, contexts, and populations. Integrating neurobiological markers

with psychosocial assessments may enhance measurement precision and support the development of personalized, recovery-oriented strategies for strengthening resilience in mental health care.

CONCLUSION

Psychological resilience is a key mechanism underlying adaptation and recovery among individuals with mental health conditions, encompassing emotional regulation, resource mobilization, and post-adversity growth to sustain stability and foster growth following adversity. This concept analysis clarifies the defining attributes, antecedents, and consequences of resilience, providing a clearer theoretical foundation for future research, assessment, and clinical practice. Clinically, resilience-oriented approaches may enhance individualized care, strengthen therapeutic relationships, and support recovery-oriented environments. Integrating resilience-promoting strategies into mental health systems and professional education may promote not only symptom reduction but also long-term psychological well-being. Collectively, these findings provide a clearer conceptual framework for guiding resilience assessment, intervention development, and recovery-oriented mental health care.

Data Sharing Statement

Ethical approval was not required for research presented in this study.

Disclosure

The authors declare no conflict of interest.

REFERENCES

1. Southwick SM, Charney DS. Resilience for frontline health care workers: evidence-based recommendations. Am J Med. 2021;134(7):829-830.
2. Masten AS, Lucke CM, Nelson KM, et al. Resilience in development and psychopathology: multisystem perspectives. Annu Rev Clin Psychol. 2021;17:521-549.
3. Hu T, Zhang D, Wang J. A meta-analysis of the trait resilience and mental health. Pers Individ Dif. 2015;76:18-27.
4. Kökçam B, Arslan C, Traş Z. Do psychological resilience and emotional intelligence vary among stress profiles in university students? Front Psychol. 2022;12:788506.
5. Troy AS, Willroth EC, Shallcross AJ, et al. Psychological resilience: an affect-regulation framework. Annu Rev Psychol. 2023;74:547-576.
6. Meraz R, McGee J, Ke W, et al. Resilience mediates the effects of self-care activation and hope on medication adherence in heart failure patients. Res Nurs Health. 2023;46(3):323-335.
7. Chen C, Sun X, Liu Z, et al. The relationship between resilience and quality of life in advanced cancer survivors: multiple mediating effects of social support and spirituality. Front Public Health. 2023;11:1207097.
8. Jeamjitvibool T, Duangchan C, Mousa A, et al. The association between resilience and psychological distress during the COVID-19 pandemic: a systematic review and meta-analysis. Int J Environ Res Public Health. 2022;19(22):14854.
9. Oviedo DC, Tratner AE, Pinzón MS, et al. Resilience mediates the effect of the COVID-19 pandemic on mental health in a sample of adults in Panama. Front Psychol. 2023;14:1235935.
10. Fletcher D, Sarkar M. Psychological resilience: a review and critique of definitions, concepts, and theory. Eur Psychol. 2013;18(1):12-23.
11. Ungar M, Theron L. Resilience and mental health: how multisystemic processes contribute to positive outcomes. Lancet Psychiatry. 2020;7(5):441-448.
12. Cosco TD, Kaushal A, Hardy R, et al. Operationalising resilience in longitudinal studies: a systematic review. J Epidemiol Community Health. 2017;71(1):98-104.
13. Ungar M, Jefferies P. Becoming more rugged and better resourced: the R2 resilience program's psychosocial approach to thriving. Front Psychol. 2021;12:745283.
14. Ang WR, Ang WHD, Cham SQG, et al. Effectiveness of resilience interventions among cancer patients: a systematic review and meta-analysis. Eur J Oncol Nurs. 2023;67:102446.
15. Rudenstine S, Feliz S, Brown O, Schulder T. Defying risk: moving from resilience to the capacity to adapt, a contribution to mental health prevention. Front Psychol. 2025;16:1600841.
16. Britt TW, Shen W, Sinclair RR, et al. How much do we really know about employee resilience? Ind Organ Psychol. 2016;9(2):378-404.
17. Labrague LJ. Psychological resilience, coping behaviours and social support among health care workers during the COVID-19 pandemic: a systematic review

of quantitative studies. J Nurs Manag. 2021;29(7):1893-1905.
18. Walker LO, Avant KC. Strategies for theory construction in nursing. 6th ed. Pearson; 2019.
19. Windle G, Bennett KM, MacLeod C. The influence of life experiences on the development of resilience in older people with co-morbid health problems. Front Med (Lausanne). 2020;7:502314.
20. Southwick SM, Bonanno GA, Masten AS, et al. Resilience definitions, theory, and challenges: interdisciplinary perspectives. Eur J Psychotraumatol. 2014;5:25338.
21. Tai APL, Leung MK, Geng X, et al. Conceptualizing psychological resilience through resting-state functional MRI in a mentally healthy population: a systematic review. Front Behav Neurosci. 2023;17:1175064.
22. Liebenberg L. Reconsidering interactive resilience processes in mental health: Implications for child and youth services. J Community Psychol. 2020 Jul;48(5):1365-1380.
23. Anderson K, Priebe S. Concepts of Resilience in Adolescent Mental Health Research. J Adolesc Health. 2021 Nov;69(5):689-695.
24. Calhoun CD, Stone KJ, Cobb AR, et al. The role of social support in coping with psychological trauma: an integrated biopsychosocial model for posttraumatic stress recovery. Psychiatr Q. 2022;93(4):949-970.
25. Moisoglou I, Katsiroumpa A, Kolisiati A, et al. Resilience and social support improve mental health and quality of life in patients with post-covid-19 syndrome. Eur J Investig Health Psychol Educ 2024;14(1):230-242.
26. Vella SLC, Pai NB. A theoretical review of psychological resilience: defining resilience and research over the decades. Arch Med Health Sci. 2019;7(2):233-239.
27. Hui CLM, Wong CCL, Lui ECY, et al. Effects of mindfulness-based intervention in preventing relapse in patients with remitted psychosis: a randomized controlled trial. Schizophrenia (Heidelb). 2024;10(1):120.
28. Liu X, Zhang Y, Cheng H, et al. Mindfulness-based relapse prevention targeting psychological craving and trait mindfulness in young Chinese women with methamphetamine dependence: a randomized controlled trial. Front Psychiatry. 2024;15:1339517.
29. Bui MV, McInnes E, Ennis G, et al. Resilience and mental health nursing: an integrative review of updated evidence. Int J Ment Health Nurs. 2023;32(4):1055-1071.
30. Kongkar R, Ruksakulpiwat S, Phianhasin L, et al. The impact of interdisciplinary team-based care on the care and outcomes of chronically ill patients: a systematic review. J Multidiscip Healthc. 2025;18:445-457.
31. Wang Z, Song X, Liu J, et al. Latent profiles of team resilience and their relationship with team performance and turnover intentions among nurses. BMC Nurs. 2025;24(1):209.
32. Ayed N, Toner S, Priebe S. Conceptualizing resilience in adult mental health literature: a systematic review and narrative synthesis. Psychol Psychother. 2019;92(3):299-341.
33. Mesman E, Vreeker A, Hillegers M. Resilience and mental health in children and adolescents: an update of the recent literature and future directions. Curr Opin Psychiatry. 2021 Nov 1;34(6):586-592.
34. Baltacıoğlu M, Puşuroğlu M. The Effect of Psychological Resilience on Treatment Compliance and Functionality in Patients with Bipolar Disorder. Noro Psikiyatr Ars. 2025 Jun 10;62(2):136-144.
35. Imran A, Tariq S, Kapczinski F, de Azevedo Cardoso T. Psychological resilience and mood disorders: a systematic review and meta-analysis. Trends Psychiatry Psychother. 2024;46:e20220524.
36. Wang M, Xu Y, Yang BX, et al. A longitudinal study of resilience and social function in patients with colorectal cancer and stomas. J Psychosom Res. 2025;189:112013.
37. Chuang SP, Wu JYW, Wang CS. Resilience and Quality of Life in People with Mental Illness: A Systematic Review and Meta-Analysis. Neuropsychiatr Dis Treat. 2023 Mar 4;19:507-514.
38. Shrivastava A, Desousa A. Resilience: a psychobiological construct for psychiatric disorders. Indian J Psychiatry. 2016;58(1):38-43.
39. Sisto A, Vicinanza F, Campanozzi LL, et al. Towards a transversal definition of psychological resilience: a literature review. Medicina (Kaunas). 2019;55(11):745.
40. Kunzler AM, Helmreich I, Chmitorz A, et al. Psychological interventions to foster resilience in healthcare professionals.

Cochrane Database Syst Rev. 2020;7:CD012527.

41. Connor KM, Davidson JR. Development of a new resilience scale: the Connor–Davidson Resilience Scale (CD-RISC). Depress Anxiety. 2003;18(2):76-82.
42. Friborg O, Hjemdal O, Rosenvinge JH, Martinussen M. A new rating scale for adult resilience: what are the central protective resources behind healthy adjustment? Int J Methods Psychiatr Res. 2003;12(2):65-76.
43. Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P, Bernard J. The brief resilience scale: assessing the ability to bounce back. Int J Behav Med. 2008;15(3):194-200.
44. Margetts JL, Hazelton M, Santangelo P, et al. Measurement of psychological resilience to support therapy interventions in clinical mental healthcare: a scoping review. Int J Ment Health Nurs. 2024;33(6):1921-1940.
45. Jung SJ, Jeon YJ, Choi KW, Yang JS, Chae JH, Koenen KC, Kim HC. Correlates of psychological resilience and risk: Prospective associations of self-reported and relative resilience with Connor-Davidsonresilience scale, heart rate variability, and mental health indices. Brain Behav. 2021 May;11(5):e02091.
46. Foster K, Roche M, Delgado C, Cuzzillo C, Giandinoto JA, Furness T. Resilience and mental health nursing: An integrative review of international literature. Int J Ment Health Nurs. 2019 Feb;28(1):71-85.
47. Joyce S, Shand F, Tighe J, et al. Road to resilience: a systematic review and meta-analysis of resilience training programmes and interventions. BMJ Open. 2018;8(6):e017858.
48. Galante J, Friedrich C, Dalgleish T, et al. Individual participant data systematic review and meta-analysis of mindfulness-based programmes. Nat Ment Health. 2023;1(7):462-476.
49. O'Connor M, Stapleton A, O'Reilly G, et al. The efficacy of mindfulness-based interventions in promoting resilience. J Contextual Behav Sci. 2023;28:215-225.
50. Precious D, Lindsay A. Mental resilience training. J R Army Med Corps. 2019 Apr;165(2):106-108.

TABLES

Supplementary Table 1. Analysis of literature

No.	Authors (Year)	Methods	Definition of Resilience	Defining Attributes	Antecedents	Consequences	Empirical Referents
1	Troy et al., 2023	Review	Affect-regulation enabling adaptation under stress	Emotional/cognitive stability; adaptive affect regulation	Emotion regulation; optimism; mindfulness	Self-efficacy; hope; growth	Stress adaptation studies
2	Windle et al., 2020	Qualitative Interviews	Dynamic capacity to adapt and maintain well-being	Flexibility; positive outlook; active coping	Life experiences; social support; access to resources	Emotional stability; illness management; QoL	Qualitative indicators; CFAS data
3	Southwick & Charney, 2021	Narrative Review	Adaptation via neurobiological, cognitive, psychosocial systems	Neurobiological regulation; cognitive flexibility; meaning	Optimism; active coping; leadership climate	Adjustment; reduced stress reactivity	Psychometric scales; biological markers
4	Hu et al., 2015	Meta-analysis	Trait resilience as protective factor	Resource mobilization; coping ability	Self-efficacy; optimism; emotion regulation	Mental health outcomes	Trait resilience measures
5	Liebenberg, 2020	Conceptual/Theoretical	Interactive adaptive process	Flexibility; resourcefulness	Adversity exposure; family/community support	Social functioning; mental health	Program evaluations
6	Anderson & Priebe, 2021	Literature Review	Maintain/regain mental health despite adversity	Adaptability; coping; recovery; growth	Stress exposure; social support	Reduced psychopathology	Longitudinal indices
7	Tai et al., 2023	Systematic Review	Neuroimaging of resilience	Emotional/cognitive regulation	Cognitive capacity; brain networks	Stress adaptation; emotional stability	fMRI
8	Cosco et al., 2017	Systematic Review	Maintain or regain health	Restoration; growth	Personal resources; environment	Recovery trajectory	Longitudinal studies

No.	Authors (Year)	Methods	Definition of Resilience	Defining Attributes	Antecedents	Consequences	Empirical Referents
9	Masten et al., 2021	Review	Multisystemic adaptation	Resource utilization; adaptive regulation	Individual skills; family support	Growth; functional adaptation	Developmental studies
10	Ungar & Jefferies, 2021	Conceptual	Positive adaptation via multisystem resources	Resource mobilization; environmental navigation	Social support; community resources	QoL; functional outcomes	Mixed methods
11	Sisto et al., 2019	Review	Dynamic process to cope with stress	Emotional regulation; coping; growth	Individual strengths; interpersonal support	Mental health; life satisfaction	Conceptual reviews
12	Shrivastava & Desousa, 2016	Review	Psychobiological adaptive capacity	Emotional stability; resource mobilization	Neurobiological factors	Recovery; coping	Neuropsych studies
13	Kunzler et al., 2020	Systematic Review	Interventions fostering resilience	Resource mobilization; regulation	Training; social support	Reduced burnout	Intervention RCTs
14	Ang et al., 2023	Systematic Review	Intervention outcomes in cancer	Stability; mobilization; growth	Mindfulness; psychoeducation	Reduced distress	RCTs
15	Jeamjitvibool et al., 2022	Meta-analysis	Buffering distress during pandemics	Emotional & cognitive regulation	Social support; coping	Reduced anxiety & depression	COVID studies
16	Oviedo et al., 2023	Observational	Resilience mediates mental health outcomes	Emotional stability; resource use	Social support; coping	Less distress	Survey
17	Calhoun et al., 2022	Theoretical	Social support enhances trauma recovery	Resource mobilization; regulation	Interpersonal relationships	Faster recovery	Theoretical
18	Foster et al., 2019	Integrative Review	Maintain well-being in nursing	Emotional regulation; perseverance	Stress; support systems	Reduced burnout	Scales; interviews

No.	Authors (Year)	Methods	Definition of Resilience	Defining Attributes	Antecedents	Consequences	Empirical Referents
19	Margetts et al., 2024	Scoping Review	Measurable adaptive capacity	Regulation; cognitive adaptation; connectedness	Self-efficacy; mindfulness	Treatment engagement	CD-RISC, RSA, BRS
20	Labrague et al., 2021	Systematic Review	Coping among healthcare workers	Resource mobilization; regulation	Social support; coping	Reduced burnout	Quantitative
21	Bui et al., 2023	Integrative Review	Multidimensional resilience	Stability; mobilization; growth	Teamwork; leadership	Professional well-being	Mixed
22	Rudenstine et al., 2025	Review	Capacity to adapt in prevention	Resource mobilization; regulation	Coping skills; support	Growth	Theory/ empirical
23	Ungar & Theron, 2020	Review	Multisystemic resilience	Resource mobilization; growth	Community, family, personal strengths	Adaptation; life satisfaction	Longitudinal
24	Vella & Pai, 2019	Review	Emotional regulation & adaptive coping	Regulation; adaptation	Individual, social, environmental factors	Functioning	Literature
25	Ayed et al., 2019	Systematic Review		Stability; mobilization; growth	Personal skills; environment	Improved mental health	Systematic data
26	Mesman et al., 2021	Review	Child/adolescent resilience	Regulation; coping; adaptation	Family; peer; traits	Reduced pathology	Longitudinal

Supplementary Table 2. Examples of the Coding Process

Raw Data Excerpt	Initial Codes	Focused Codes	Final Attribute
"Individuals who stay emotionally balanced in stressful situations recover more effectively."	Emotional balance; stability under stress	Emotional regulation under adversity	Psychological and emotional stability under adversity
"Resilient people draw on both personal strengths and social resources when facing challenges."	Internal strengths; social resources	Internal/external resource mobilization	Mobilization of internal and external resources for adaptive coping
"Positive adaptation occurs when individuals find new meaning after illness or adversity."	Meaning-making; positive personal change	Post-adversity transformation	Restoration and growth following adversity

FIGURE AND FIGURE LEGEND

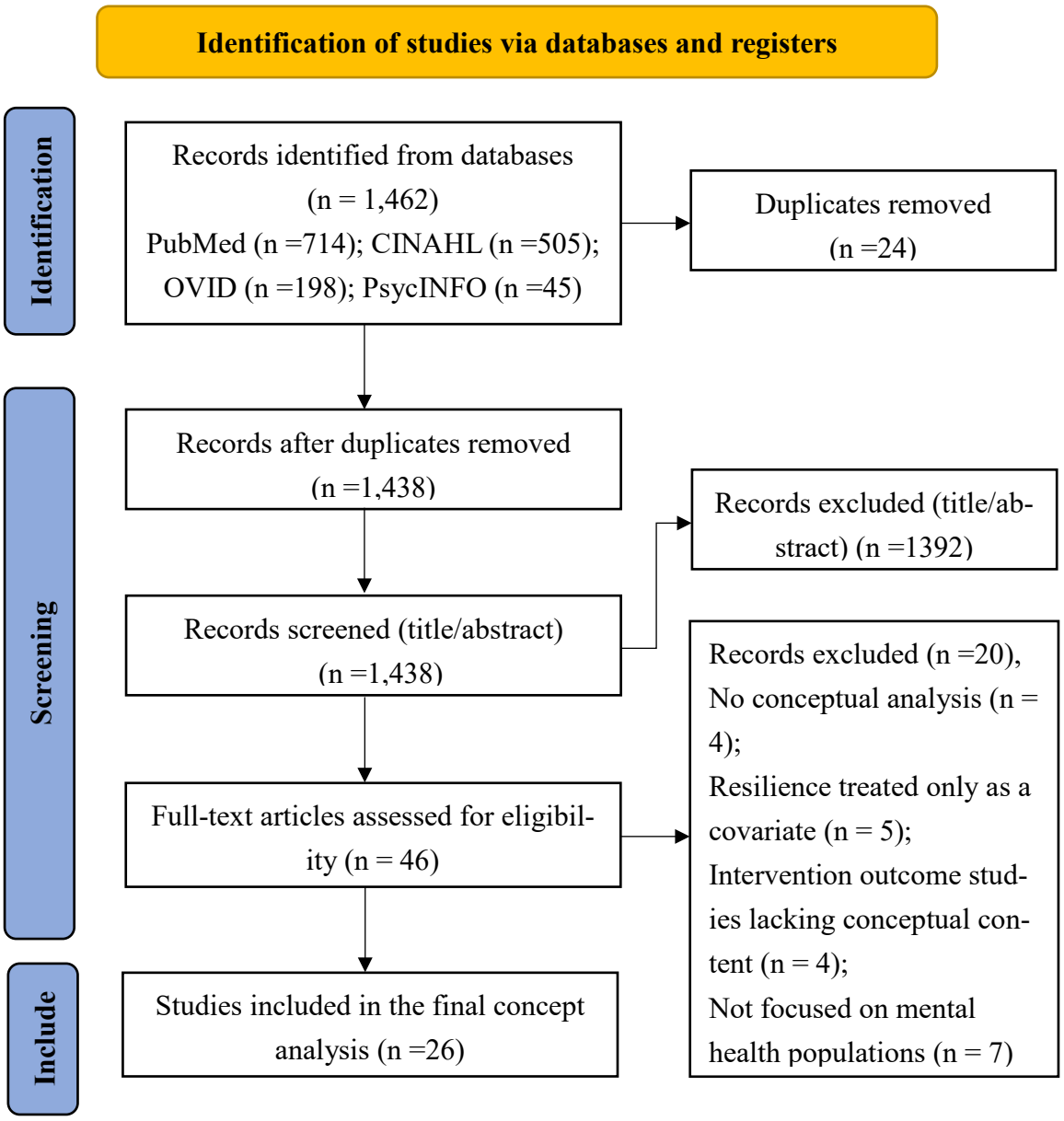


Figure 1 PRISMA flow diagram

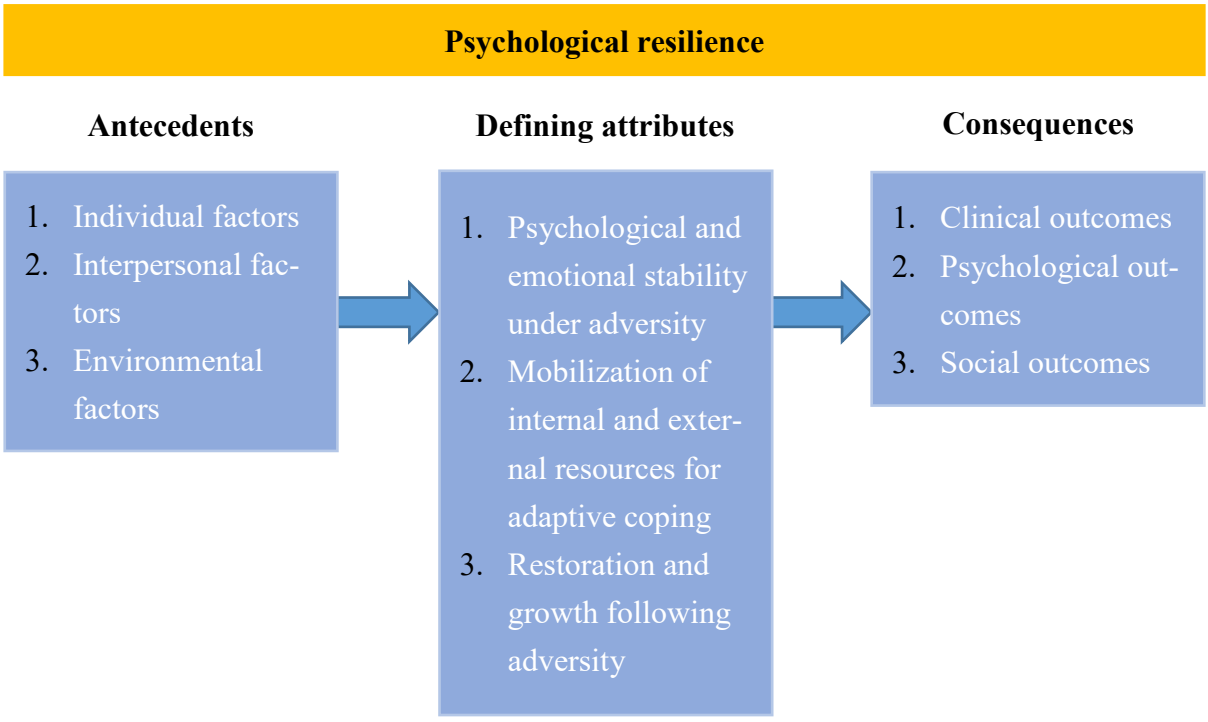


Figure 2 Antecedents, defining attributes, and consequences of psychological resilience in Mental Health.

心理健康之心理韌性概念分析

何美欣[1]　蔡瑞修[2,3*]

中文摘要

背景：心理韌性是心理健康與復元歷程中的重要概念，攸關個體面對逆境、創傷或疾病時的適應能力，並影響其心理健康與生活品質。然而，由於不同學科對心理韌性的定義不盡相同，且常與因應能力及復元等相關概念混淆，使其概念內涵與界定特徵尚未獲得一致共識。因此，本文旨在釐清心理韌性於心理健康脈絡中的概念內涵與界定特徵。**方法**：本文依據 Walker & Avant (2019) 八步驟概念分析法，分析 2015 至 2025 年間 PubMed、Ovid、CINAHL 及 PsycINFO 資料庫之相關文獻，以釐清心理韌性於心理健康脈絡中的概念內涵，並透過典型案例、邊緣案例、相關案例及相反案例闡明其定義性特徵。**結果**：心理韌性具有三項核心界定屬性，包括維持逆境下的心理與情緒穩定、運用內外在資源進行適應性因應，以及展現逆境後的恢復與成長；其前置因子包括個人、人際及環境因素；後果則涵蓋臨床、心理及社會層面的正向結果，包括症狀穩定、情緒福祉提升、功能恢復及生活品質改善。實證參考指標主要為評估適應性因應、情緒調節及復元結果之心理韌性相關測量工具與指標。**結論**：心理韌性是一種促進個體正向適應逆境並實現復元的動態且多面向歷程。本文有助於增進醫療照護人員對心理韌性的理解，並可作為未來評估工具發展、臨床介入措施設計及復元導向心理健康照護之理論參考。

關鍵字：心理韌性、概念分析、心理健康、復元導向照護

[1] 佛教慈濟醫療財團法人大林慈濟醫院研究部專任研究助理

[2] 佛教慈濟醫療財團法人大林慈濟醫院身心醫學科主治醫師

[3] 慈濟大學醫學院助理教授

[*]通訊作者：蔡瑞修　電子信箱 faanvangogh@gmail.com

Submitted October 01, 2025.
Final version accepted
January 19, 2026.

Cite as: Jing-Sian Shih, Anna Chang
Subtle Beginnings, Profound Impact: Pure Word Deafness from Sequential Temporal Lobe Infarcts in a Patient with Antiphospholipid Syndrome
Fu-Jen Journal of Medicine 24(2): 37-42, 2026.
DOI: 10.53106/181020932026062402004

Brief Report

Subtle Beginnings, Profound Impact: Pure Word Deafness from Sequential Temporal Lobe Infarcts in a Patient with Antiphospholipid Syndrome

Jing-Sian Shih, Anna Chang*

Department of Neurology, Shin Kong Wu Ho-Su Memorial Hospital, Taipei, Taiwan

*Corresponding author. E-mail address:
Bian_na23@hotmail.com (Anna Chang)

ABSTRACT

Auditory symptoms are an uncommon manifestation of stroke, as unilateral lesions rarely cause significant hearing impairment. This report details a unique case of recurrent ischemic strokes in both temporal lobes of a 50-year-old woman with systemic lupus erythematosus (SLE) and a newly diagnosed antiphospholipid syndrome (APS). The patient initially presented with mild bilateral "buzzing" for six months, which was initially disregarded. An acute deterioration in speech comprehension and eventual pure word deafness followed a second ischemic event. Imaging revealed an old right temporal lobe infarct on brain CT and a new left temporal lobe infarct on MRI, explaining her profound auditory processing deficit. Laboratory studies confirmed APS, and she was treated with warfarin and intensified immunosuppressive therapy. Despite management, her auditory comprehension remained severely impaired, necessitating lip-reading. This case highlights the diagnostic challenges of subtle initial auditory symptoms and underscores the importance of a high clinical suspicion and advanced neuroimaging in patients with prothrombotic conditions like APS, where recurrence is a significant concern.

Keywords: Pure word deafness, Antiphospholipid syndrome, Cerebral infarction, Temporal lobe infarction, Recurrent ischemic strokes

INTRODUCTION

Auditory symptoms are uncommon in stroke due to bilateral cortical auditory representation, meaning unilateral lesions rarely cause significant hearing impairment.[1,3,5] However, rare cases of stroke-related auditory dysfunction, particularly with bilateral cerebral

involvement, can present subtly and pose diagnostic challenges.[1,2,4] This report details a unique case of recurrent ischemic strokes affecting both temporal lobes in a patient with systemic lupus erythematosus (SLE) and newly diagnosed antiphospholipid syndrome (APS). The case highlights the insidious onset of initial auditory symptoms, leading to significant diagnostic delay, followed by an acute and more severe auditory-language deficit after the second event.

CASE REPORT

A 50-year-old woman with a history of SLE developed mild bilateral buzzing in her ears six months prior to admission, which she initially disregarded. Two months prior, she consulted an otolaryngologist, where patulous Eustachian tube was suspected; audiometry showed bilateral mild sensorineural hearing loss at high frequency (8k Hz) [Figure 1a], and no further treatment was initiated. She was on prednisolone, Mycophenolate mofetil (MMF), and aspirin, but temporarily discontinued aspirin for a dental procedure. Shortly afterward, she experienced acute deterioration in speech comprehension. Though hearing sounds, spoken language became distorted, resembling indistinct buzzing. This was accompanied by word-finding difficulty, phonemic paraphasia, eventually pure word deafness, with preserved reading, writing, and normal motor-sensory function.

Given the acute auditory and language symptoms, an initial non-contrast brain CT was taken in 4 hours and revealed an old infarct in the right temporal lobe [Figure 2]. Brain MRI was performed 2 days later, which showed a new infarct in the left temporal lobe, involving the auditory cortex (middle cerebral artery territory) [Figure 3]. Repeated audiometry showed bilateral severe to profound sensorineural hearing loss. [Figure 1b]

Extensive stroke evaluation was unremarkable for large-vessel disease or cardioembolism. Laboratory studies revealed positive lupus anticoagulant, anticardiolipin, and anti-β2 glycoprotein I antibodies, leading to a new diagnosis of APS. The stroke was classified as “other determined etiology” due to APS-related thrombosis. She was started on warfarin for secondary stroke prevention, and immunosuppressive therapy was intensified. Despite multidisciplinary management, auditory comprehension remained severely impaired, requiring reliance on lip reading for communication.

DISCUSSION

This case uniquely highlights the diagnostic challenges of stroke when initial manifestations are subtle, non-specific auditory symptoms. The patient's mild bilateral buzzing, likely from her initial, undiagnosed, right temporal lobe infarct, illustrates how auditory dysfunction due to cerebrovascular disease can be easily underestimated.[5] Due to the robust bilateral auditory cortical projection, a single unilateral brain lesion rarely causes clinically significant hearing loss.[3,5] Consequently, such mild symptoms often lead to delayed medical attention, as seen here, where initial otorhinolaryngology consultation didn't prompt neurological investigation.

The temporal lobes are responsible for processing sound, forming memories, and understanding language.[6] The temporal lobes process sensory input, primarily auditory and visual signals, working in conjunction with other brain regions via the corpus callosum. The left temporal lobe, typically the most dominant in people, is associated with understanding language, learning, memorizing, forming speech, and remembering verbal information. On the other hand, the right temporal lobe, typically the least dominant in people, is associated with learning and memorizing non-verbal information (e.g., drawings and music), recognizing information, and determining facial expressions. This unique physiological distribution explains how difficult it is to disclose an insult on the right temporal region when symptoms are rather obscure, abstract, and less debilitating.

“Pure word deafness” was a term first brought Kussmaul in 1877 in patients with inability to understand or repeat spoken language, in the absence of language difficulty.[7] The patient is not deaf to pure tones or to meaningful nonverbal noises such as animal cries or the ringing of a bell. Classically, the deficit occurs with bilateral temporal lesions.[1, 2, 4] By the “disconnection” theory, these lesions disconnect the left hemisphere Wernicke's area from both primary auditory cortices (Heschl's gyrus in the superior temporal gyrus of each hemisphere), such that sounds can be heard but not analyzed by the receptive language cortex in Wernicke's area. Destruction of the auditory cortices themselves causes cortical deafness, or complex auditory disorders referred to as “auditory agnosia.” Patients with cortical lesions are usually not completely deaf; some cannot recognize either words or nonverbal sounds. Cases of unilateral, left temporal stroke have also been reported to develop pure word deafness.[8] Some patients with Wernicke's aphasia and damage predominantly affecting the temporal lobe may have disproportionate involvement of auditory comprehension, as compared to reading comprehension, thus resembling the deficit of pure word deafness. In fact, pure word deafness is often not

entirely "pure," in that mild paraphasic speech dysfunction is usually associated.

The acute deterioration in speech comprehension, progressing to severe auditory-verbal agnosia, after the second ischemic event, was crucial. Initial CT showed only the old right temporal infarct, but acute aphasia strongly suggested a new dominant hemisphere lesion. MRI confirmed a new left temporal lobe infarct, involving the auditory cortex. This, combined with the pre-existing right temporal infarct, explained the profound auditory processing deficit. As forementioned before, significant auditory comprehension impairments are typically associated with bilateral temporal lobe lesions, often from sequential strokes. This case underscores the importance of high clinical suspicion and advanced neuroimaging in complex central neurological disorders, especially with recurrent cerebrovascular events affecting functionally related brain regions.

The recurrent strokes stemmed from APS, an autoimmune disorder causing thrombosis, with stroke being a common and devastating manifestation.[9] Her positive lupus anticoagulant, anticardiolipin, and anti-β2 glycoprotein I antibodies confirmed APS. Warfarin is the first-line anticoagulant for secondary stroke prevention in APS patients.[9] Despite treatment, her auditory comprehension remained severely impaired, necessitating lip-reading. This aligns with the generally poor functional prognosis for severe central auditory agnosia, especially with significant bilateral cortical damages.[2,4] While some recovery may occur, full restoration of auditory verbal comprehension in extensive cortical involvement is often limited.[2,4] This case highlights the debilitating consequences of recurrent strokes in vulnerable brain regions, particularly in patients with prothrombotic conditions like APS, where recurrence is a concern.[4,8] Patients presenting with pure word deafness resulting from unilateral[9] or bilateral temporal infarcts[10] in patients with APS/SLE had been reported. The report of our case is also to re-emphasize the need to acquire anticoagulants in patients with APS/SLE as a primary preventive measure to reduce the risk of recurrent strokes.

CONCLUSION

This case report details a patient with SLE who presented with pure word deafness resulting from sequential ischemic strokes in both temporal lobes. The underlying etiology was a newly diagnosed APS. This case underscores the diagnostic challenge posed by subtle, non-specific auditory symptoms, which can lead to delayed diagnosis of an initial infarct. It highlights that profound auditory-verbal agnosia is typically associated with bilateral temporal lobe lesions, often from recurrent cerebrovascular events. The case emphasizes the critical importance of high clinical suspicion, advanced neuroimaging, and early diagnosis and management of prothrombotic conditions like APS to prevent recurrent, devastating strokes.

REFERENCES

1. Silva J, Sousa M, Mestre S, et al. Cortical deafness of following bilateral temporal lobe stroke. J Stroke Cerebrovasc Dis 2020; 29:104827.
2. Narayanan S, Majeed KA, Subramaniam G, et al. A Case of Cortical Deafness due to Bilateral Heschl Gyrus Infarct. Case Reports in Medicine 2017;2017:1-3.
3. Virvidaki I-E, Messinis L, Nasios G. Pure word deafness due to bilateral temporal lobe ischemic stroke occurring at different time points over the years: a case report on the insight of brain language network reorganization. Neurocase 2021;27:106-12.
4. Silva G, Gonçalves R, Taveira I, et al. Stroke-Associated Cortical Deafness: A Systematic Review of Clinical and Radiological Characteristics. Brain Sciences 2021;11:1383.
5. Tabuchi S. Auditory Dysfunction in Patients with Cerebrovascular Disease. The Scientific World Journal 2014;2014:261824.
6. Ubellacker DM, Hillis AE. Handbook of Clinical Neurology; 2022:211-20.
7. Kussmau1 A. Disturbances of speech in "Cyclopedia of The Practice of Medicine." Wi1liam Wood and Co., New York;1877:581-875.
8. Ohnaka K, Sakurai Y, Fuse S, et al. Pure word deafness after cerebral hemorrhage in th left temporal lobe: a case report. Rinsho Shinkeigaku 1995;35:290-5.
9. Fan Y, Xu Y, Zhang S, et al. Stroke and Risk Factors in Antiphospholipid Syndrome. Journal of Personalized Medicine 2024;14:24.
10. Kim YJ, Kim HR, Park SN, et al. Pure word deafness in a patient with systemic lupus erythematosus. Korea J Med 2004;420-4.

FIGURE AND FIGURE LEGEND

Figure 1. Audiometry. (A) Audiometry taken 2 months prior showed bilateral mild sensorineural hearing loss at high frequency (8k Hz). (B) Repeated audiometry showed bilateral severe to profound sensorineural hearing loss.

(A) (B)

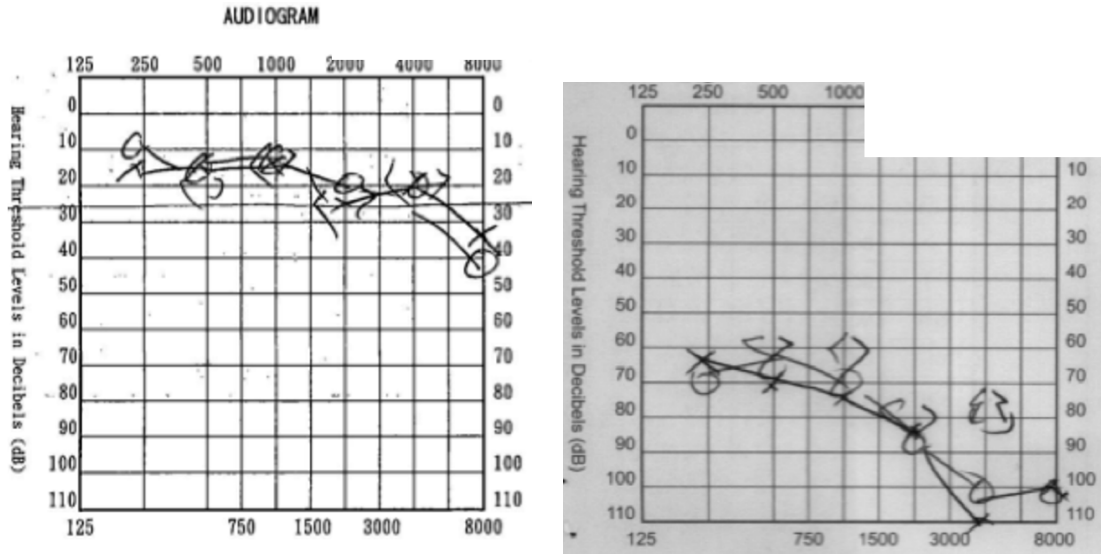


Figure 2. Brain CT showed wedge-shaped hypodensed lesion at right temporal lobe (arrow). (A) Axial-view. (B) Coronal-view.

(A) (B)

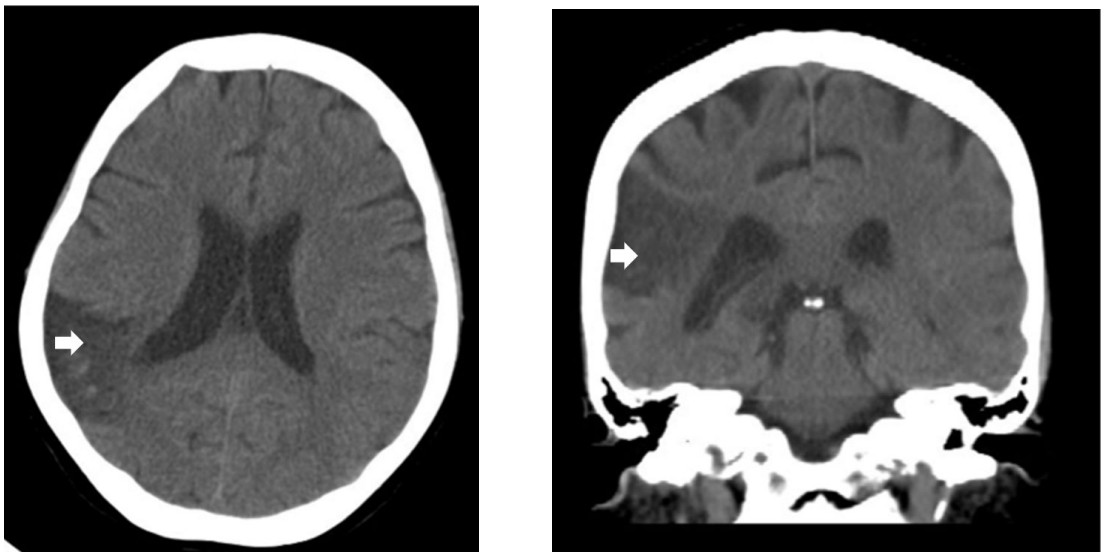
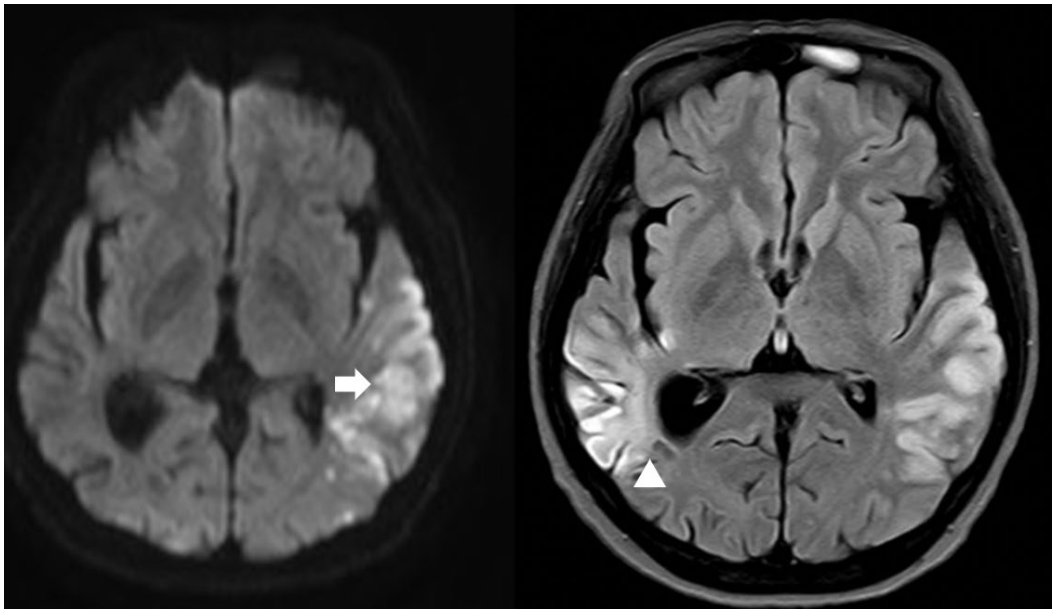


Figure 3. Axial brain MRI. (A) Diffusion weighted image (DWI) sequence revealed recent infarction at left temporal area (arrow) in the left middle cerebral artery (MCA) territory. (B) FLAIR sequence showed old infarction at right temporo-parietal area with focal laminar necrosis in the right MCA territory (arrowhead).



細微的開始，深遠的影響：抗磷脂綜合症患者因連續性顳葉梗塞而引起的純語言失聰

施景獻　張安娜*

中文摘要

聽覺症狀在中風中並不常見，因為單側病變很少導致顯著的聽力障礙。本報告詳細描述了一名 50 歲女性的獨特案例，她因全身性紅斑狼瘡（SLE）及新診斷的抗磷脂綜合症（APS）而反復發生雙側顳葉缺血性中風。患者最初出現輕度的雙側「嗡嗡聲」，持續六個月，但起初未受到重視。在第二次缺血事件後，語言理解急劇惡化，最終導致純語言失聰。影像學檢查顯示腦部 CT 顯示右側顳葉舊梗塞，而 MRI 則顯示左側顳葉新梗塞，解釋了她深度的聽覺處理缺陷。實驗室檢查確定了抗磷脂綜合症，並對她進行了華法林和加強免疫抑制療法治療。儘管進行了管理，她的聽覺理解仍然嚴重受損，不得不依賴讀唇。

關鍵字：純語言失聰、抗磷脂綜合症、腦梗塞、顳葉梗塞、反覆缺血性中風

新光吳火獅紀念醫院神經內科

*通訊作者：張安娜　電子信箱 Bian_na23@hotmail.com

Fu-Jen Journal of Medicine

Mission and Goals

The Fu-Jen Journal of Medicine (FJJM) is a peer-reviewed journal which aims to enhance research quality of staffs in the College of Medicine, Fu Jen Catholic University. The journal publishes original investigations across a wide range of medical disciplines including original research articles in basic and clinical sciences, case reports, review articles, brief reports, and letter to the editor. FJJM is now issued by the Center of Medical Education in the College of Medicine, Fu Jen Catholic University. To promote journal quality, the manuscript submitted to FJJM after August first 2015 has to be prepared in English to meet the international standards.

Issue Date	December 01 2003
Publication Date	June 30 2026
Institution	College of Medicine, Fu Jen Catholic University
Honorable publisher	Yi-Chen Lan
Publisher	Jun-Hou Liao
Editor-in-chief	Ke-hsin Chueh
Associate Editors	Jian-Hong Yeh, Yu-Wen Lin, Vin-chi Wang Shih-Chang Lin

Editors

Cheng-Yi Wang	Cheng-Hsun Ho	Chong-Kuan Wu	Ming-Hong Shen
Shih-Chang Lin	Ying-Hong Lin	Hui-Yu Lin	Wei-Che Chiu
Yi-Chou Hou	Li-Wei Hong	Meng-Lin Chang	Chao-Jian Chang
Chia-Juan Chang	Tsung-Tai Chen	Bin-Fang Chen	Zai-Ting Ye
Chia-Chia Chao	Chien-Xiu Liu	Wei-Lun Liu	

Telephone	(02) 2905-3477
Address	Center for Medical Education, College of Medicine, Fu Jen Catholic University No. 510 Zhongzheng Rd., Xinzhuang Dist., New Taipei City, 24205 Taiwan

輔仁大學醫學院
College of Medicine Fu Jen Catholic University

TEL : +886-2-2905 3477
E-mail : fjjm@mail.fju.edu.tw
No.510,Zhongzheng Rd, Xinzhuang Dist
New Taipei City 24205, Taiwan.(R.O.C)

http:// cme.mc.fju.edu.tw