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RESEARCH ARTICLE

Perceived biopsychosocial determinants of psychotic illness among caregivers impacts on the family of Kathmandu district in Nepal

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ABSTRACT

The aim of the study is to determine whether the biological, psychological, and social components contributing to psychotic illness and examine their effects on families across social, financial, emotional, and health dimensions. A Population Proportion Formula was used to determine the sample size, applying a theoretical approach to a sample of approximately 200 caregivers of psychotic patients in Kathmandu, Nepal. Quantitative data were gathered via questionnaires. Nonclinical data were used for analysis. Findings from the analysis of Objective 1 revealed that social determinants were most reported; however, biological and psychosocial factors were also prevalent. These determinants were both directly and indirectly linked to psychological or emotional factors, aligning with the biopsychosocial (BPS) model developed by George Libman Engel of the University of Rochester Medical Center, New York. The biopsychosocial (BPS) model was formulated in the mid-1970s, with significant discussion of the model occurring in a seminal article published in 1977 in the journal *Science*. For Objective 2, results showed that the emotional impact on families was the most prominent, followed by social, financial, and health impacts. The findings show that emotional effects have the greatest influence, followed by financial, social, and health effects. These results reinforce the need for further research into the factors associated with psychotic disorders and their effects on families.

Keywords: psychotic; patients; emotional determinants; impacts

1. Introduction

Psychotic disorders, as outlined in the DSM-5-TR, are characterized by core symptoms such as delusions (fixed, false beliefs), hallucinations (sensory perceptions without external stimuli, typically auditory or visual), disorganized thinking (often evident in disordered speech), severely disorganized or abnormal motor behaviour, including catatonia, and negative symptoms[1]. Psychosis is commonly associated with mental disorders within the schizophrenia spectrum and other psychotic disorders but may also present transiently in mood disorders and certain medical or substance-induced conditions. This shift in brain information processing can lead to a detachment from reality significantly affecting the individual's perception and interaction with their surroundings[2]. The causes of psychosis are influenced by multiple

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factors—biological, social, psychological, and environmental. Misconceptions about mental health, low

awareness of symptoms, internalized stigma, financial hardships, distance from psychiatric services, and complex healthcare bureaucracy can all be significant barriers to treatment and contribute to the experience of psychosis[3].

Psychosis affects the individual and their entire family, often causing a deep sense of grief. Family members typically go through three stages of grief: shock and denial, acceptance, and learning to cope. This grief process can lead to conflict as different family members may be at varying stages. Stress from illness and the related bereavement can strain family relationships, impacting marriages and family dynamics significantly.

Psychosis can also disrupt personal development, affecting milestones such as developing an independent identity, completing education, building a career, forming relationships, and starting a family. These developmental challenges may affect any family member affected by psychosis[4].

1.1. Significance of the study

The research on the determinants of psychotic patients and their impacts on families could be an initial step towards comprehending the true circumstances and suffering of psychotic patients and their families in Kathmandu district, Nepal. This study's primary goal is to document the real- world circumstances and struggles that patients and caregivers. It can be seen as a small effort to raise awareness among Nepal's populace and government about serious mental illness and the predicament that these patients' families confront. As a result, the government and general public will be able to assist in improving the lives of psychotic patients and their families. In general, progress has been made by neuroscience, psychology, and medicine in determining plausible pathways leading to the emergence of psychopathology. However, the results are contradictory, overlapping, and inconsistent. Even experimental and observational studies have demonstrated that stigmatizing, negative attitudes toward people with mental illnesses are linked to biogenic beliefs about mental illness. These data demonstrate that during study and experimentation, the importance of caregivers and the effects of psychosis on families were not given enough thought [5] In order to lessen mental illness, medical science and psychology now recognize the significance of caregivers' roles and the impacts psychotic individuals have on their families. By shedding light on most factors and effects, this investigation will contribute to the advancement of knowledge regarding the significance of caregivers and the impacts of psychoses. The findings of this study may aid in preventing caregivers from functioning as covert patients by promoting sufficient social support and highlighting the social impact of psychosis.

1.2. Problem statement

The inaugural epidemiological survey undertaken in the Kathmandu Valley occurred in 1984 revealed an estimated mental illness prevalence of approximately 14%[6]. Subsequently, the Government of Nepal, in collaboration with the Health Research Council and the National Mental Health Survey, conducted a comprehensive survey spanning November 2017 to January 2020. The primary aim was to evaluate the prevalence of mental disorders across Nepal and understand the help-seeking behaviours and barriers to accessing care among those affected. The anticipated outcome was the production of a detailed analytical report presenting a national overview of mental disorder prevalence. The findings from this initiative indicate that 10% of adult participants have experienced a mental disorder during their lifetime[7].

According to preliminary data from the National Census 2022, Nepal's population has now reached 29,192,480[8]. Of the 10% identified with mental disorders, around 3% exhibit psychotic symptoms, translating to approximately 87,577 individuals in Nepal, reflecting a prevalence rate of 0.3%.

Similarly, the Kathmandu district houses a population of 201,532 people in total[9] boasting the largest population across all of Nepal's districts. Adults in Kathmandu represent approximately 12% of the overall populace, totalling 20, 1753 individuals, among whom 2.4886% exhibit psychotic symptoms[10], amounting to 6025 individuals. Notably, Kathmandu serves as the capital of Nepal, analogous to Kuala Lumpur in Malaysia, and is home to a multitude of major hospitals and medical facilities. The prevalence of mental illness in the Kathmandu Valley was previously estimated at around 14% based on the 1984 epidemiological survey[11]. With its concentration of healthcare resources, including prominent hospitals and government health institutions, Kathmandu stands as the district with the most extensive healthcare infrastructure, attracting a significant portion of Nepalese seeking medical treatment[12].

Despite the notably high prevalence of mental disorders in Nepal as compared to global figures, the government's prioritization of mental health remains inadequate. Less than 3% of the national budget is allocated to the healthcare sector, with a mere 1% of that budget dedicated to mental health[13]. Regrettably, families and caregivers of individuals with mental illness are largely overlooked by governmental support[14]. Consequently, this ongoing research aims to elucidate the determinants of psychosis and the repercussions on affected families, offering foundational insights crucial for shaping national mental health policies.

Understanding the determinants and impacts of psychosis is pivotal for effectively managing affected individuals. Without this understanding, healthcare professionals risk excluding caregivers and family members of psychotic patients from the information of essential treatment and decision-making processes, potentially rendering them "hidden patients"[15]. The forthcoming study endeavours to comprehensively identify these determinants and impacts, striving to alleviate the suffering experienced by individuals with mental illness and their families by providing essential knowledge and information.

Because of the dearth of understanding regarding the factors and consequences associated with psychotic patients, both patients and their families endure significant distress. The ongoing changes stemming from the illness and its treatment consistently impact their lives. So, this study aims to illuminate the factors and consequences of psychotic patients, thereby contributing to the improvement of mental health outcomes for affected individuals.

1.3. Objectives of the study

1. To determine how caregivers perceive the bio-psychosocial factors that contribute to psychotic patients.

2. To evaluate the financial, social, emotional, and health-related impacts that psychotic patients have on their families.

1.4. Theoretical framework determinant 1

The idea explaining the foundations of mental illness is based on the bio-psychosocial model (BPS). American physician and psychiatrist, George Libman Engel (December 10, 1913– November 26, 1999) created the bio-psychosocial paradigm while he was employed at the University, Rochester Medical Centre in Rochester, New York[16]. In this hypothesis, mental illness is caused by a confluence of social, psychological, and biological factors. These components may function as both protective and risk factors for the development of psychological illnesses. However, most diseases don't have a single, distinct cause[17].

Mental health issues have a wide range of complex causes. Although they play a part, biological variables are not the only component at play. Additionally important are the social and psychological aspects. Most medical professionals believe that the bio-psychosocial model, which encompasses three key domains, can be taken as a determinant of mental health, including psychoses. Biological issues such as genetics, brain

chemistry, and brain injury. The social issues are life traumas, pressures, early life experiences, and family relationships. Psychological processes are how an individual interprets events as signifying something negative. The total mental health of an individual is the product of the complex interactions between these variables.The interaction between the factors is summarized in the diagram below. In actuality, it is a vast, intricate network[18].

1.4.1. Theoretical framework determinant 2

The diagram given in number 2 above is adapted from the article "Modern Understanding of Psychosis: From Brain Disease to Stress Disorder and Some Other Important Aspects of Psychosis" by Johannessen & Joa, which was released in 2021, to justify the independent variablesof the study. This theory states that stress from childhood trauma and other reasons has been linked to a wide range of mental illnesses, including psychosis, such as PTSD, sleep issues, anxiety, depression, bipolar disorder, hallucinations, personality disorders, drug abuse, eating disorders, and many more[19].

1.4.2. Theoretical framework 'Impact'

The discovery that multiple paths can all lead to the same result or outcome in any open system isknown as Equifinality in psychology. This is a paradigm for examining the ways in which a person's living situation, ethnicity, biology, and other factors can affect their behaviours. Accordingto the concept of Multifocality, a system's components may all function differently based on how the system is put together or the structure of the system. In short, multifocality means that one thing can be associated to multiple objects, whereas Equifinality implies that multiple things are related to a single item. The problem and situations are made much clearer by the fact that many outcomes are linked to a single predictor and multiple predictors are associated to one outcome[20] significantly clarifies the situation.

The concept of Equifinality highlights the possibility that many background risk factors could lead to the same result. The same overall conclusion is reached under a variety of initial conditions, strategies, and concepts. "Multifocality" is a concept that highlights how an individual's life may present with multiple manifestations of a single sickness, therapy, idea, or risk factor. A negative idea usually has harmful impacts in many different contexts and ways, according to DeLisi.[21].

Considering the ideas of Equifinality and Multifocality, this study also examined the interaction between a psychotic patient's family and the effects on their social life, financial status, emotionalcondition, and health.

1.4.2.1. Principles of equifinality and multifocality with practical examples

The findings of this study highlight the intricate relationships between predictors and outcomes, which align closely with the principles of Equifinality and Multifocality.

a.) Equifinality

Equifinality is the principle that different first conditions or experiences can lead to the same result. In the context of this study, several types of disruptions—biological, financial, social, or physical—can individually or collectively contribute to similar impacts within families of individuals with psychotic disorders.

For instance, financial stress might lead to heightened family conflict, just as social isolation might. Despite differing origins, these distinct stressors can ultimately result in similar outcomes, such as strained family dynamics or increased caregiver burden.

b). Multifocality

Multifocality refers to the concept that the same first condition or experience can lead to multiple possible outcomes. Here, a common factor, such as financial instability, might lead to varying consequences across different families. For one family, it may result in greater cohesion as they work together to manage their limited resources, while for another, it may lead to conflict and further isolation. This illustrates that even only a source of stress can diverge into different family dynamics, depending on other moderating factors such as family support or coping resources.

Through Equifinality and Multifocality, this study sheds light on the complexity of pathways leading to psychotic outcomes, supported by responses to the study's six research questions. These principles underscore how diverse influences can converge to similar outcomes or diverge from a common source to create distinct effects, highlighting the complexity of factors at play in the lives of families affected by psychotic disorders.

1.5. Conceptual framework

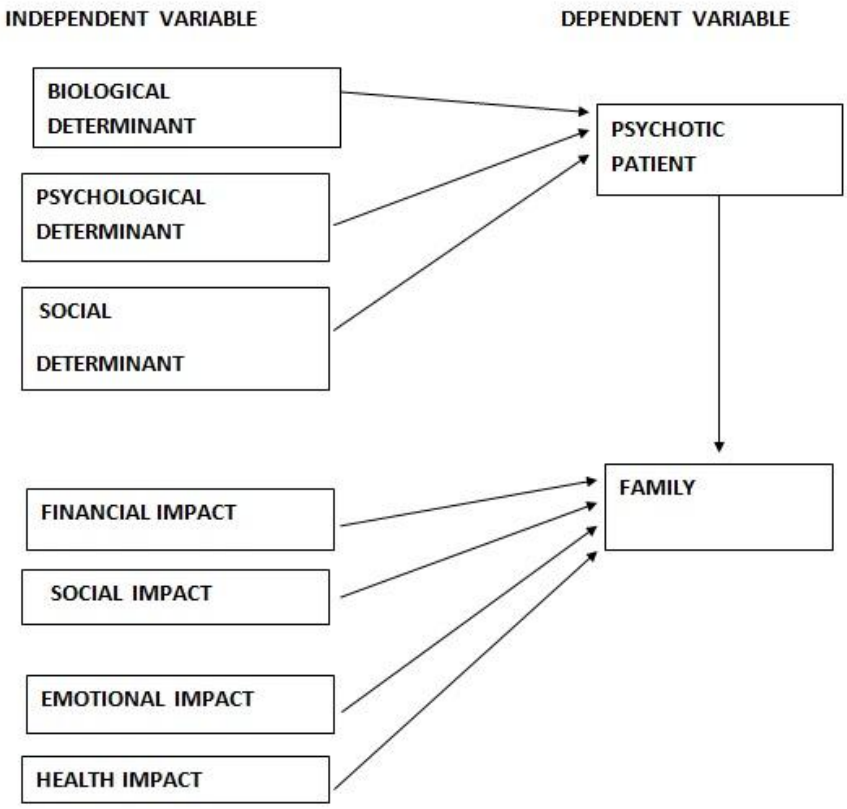

Figure 1. Conceptual framework of perceived determinants and impacts.

1.5.1 Dependent and independent variables

The dependent variables in this study are:

1. Psychotic patients
2. Families

The independent variables in this study are:

1. Biological determinants
2. Psychological determinants
3. Social determinants
4. Financial impact
5. Social impact
6. Emotional impact
7. Health impact

2. Materials and methods

Given that the Kathmandu district is home to 2,017,532 individuals overall, the sample population consists of family caregivers for patients diagnosed with psychotic symptoms[22]. It has the highest population out of all the districts of Nepal[23]. The sample was composed of 200 caregivers among the family members of patients with the diagnosis of psychotic symptoms from the Kathmandu district of Nepal.

The participants of study was selected using purposive sampling. The caregivers were selected based on the diagnosis and medication of psychotic patients by qualified psychiatrists. Only nonclinical data were employed for the analysis. The survey methods using questionnaires were used to gather the quantitative data and the semi-structured interview methods were used to collect the qualitative data. The privacy of the data was maintained through pseudonymization techniques using the tokenization method.

2.1. Data collection

For analysis, only nonclinical data was employed. Quantitative data is gathered through survey methods, and Questionnaires using the survey technique.

2.1.1. Data analysis

The collected data were entered into Windows SPSS version 25. Frequencies were used in descriptive statistics to characterize variables; therefore, descriptive analyses were utilized for objective number one. To achieve objective number two, content thematic analyses were employedto obtain a more comprehensive and lucid comprehension of the topic development process. For analysis, only nonclinical data was used. The study instruments in the survey and interview methods, respectively, were questionnaires and interview schedules.

2.2. Validity and reliability

The content validity of the instruments is substantiated by:

a.) Cronbach's alpha scale.

b.) Inter-rater reliability scale method.

c.) Back to-back translation method; and

d) Modifications.

2.3. Limitation of the study

This study was limited only to the caregivers among the family members of patients with psychotic symptoms. Therefore, limitations could occur due to the small and limited sample size.

3. Results

After gaining the results from SPSS 25, Microsoft Excel was again used for the calculation and analysis to compare and evaluate the results. However, the findings and figures were similar.

Among the 5 scales of the Likert (strongly disagree, disagree, "neither agree nor disagree", agree, and strongly agree), "**agree**" was assigned for the response of the determinant (cause) of psychosis. But according to the respondents, even if they assigned "**agree**" on the cause of psychosis, it maynot be the cause in all the psychotic patients. Anyhow, most cases of psychosis may be determined by this cause. Next, "**strongly agree**" is assigned for the universal determinant of psychosis present in all of the psychotic patients.

"Agree" was assigned as the response for the determinant (cause) of psychosis among the five Likert scales (strongly disagree, disagree, "neither agree nor disagree", agree, and strongly agree). However, the respondents stated that even if they were to "agree" on the origin of psychosis, it might not apply to every psychotic patient. In any case, this etiologic may account for most cases of psychosis. Next, a "strongly agree" rating is given to the psychotic patients' common psychoticdeterminant. Following the acquisition of data from SPSS 25, Microsoft Excel was utilized for computation and analysis to compare and assess the outcomes. The results and numbers, however, were in line.

3.1. Demographic frequency of background variables

In this study, a total of 200 caregivers were invited to participate in the study. All 200 caregivers completed the questionnaire and interview schedule, giving a response rate of 100%. All the respondents were from urban areas. Of those who completed the interviews, 100 (50%) were maleand 100 (50%) were female in terms of the frequency of gender (**Table 1**).

Table 1. Frequency and percentage of gender, Education, and economic status.

Theme	Frequency	Percent	Valid Percentage	Cumulative Percentage
Gender				
Valid Male	100	50.0	50.0	50.0
Female	100	50.0	50.0	50.0
Total	200	100.0	100.0	
Economic status				
Low	47	23.5	23.5	23.5
Medium	133	66.5	66.5	90.0
High	20	10.0	10.0	100.0
Total	200	100.0	100.0	
Academic qualification				
Illiterate	24	12.0	12.0	12.0
Literate	106	53.0	53.0	65.0
Highly literate	70	35.0	35.0	100.0

Note: *The frequencies of gender, education, and economic status.*

3.1.1. Socio-demographic characteristics of the individuals

*(*Socio-Demographic Characteristics of the Individuals are rounded to make clear and easy to read)

a) Gender:

Mean: 1.5

Median: 1.5

Mode: 1.0

Standard Deviation: 0.50

(Note: Gender is coded, e.g., 1 = Male, 2 = Female.)

b). Age:

- Mean: 42.2

Median: 44.5

- Mode: 50.0

Standard Deviation: 14.7

Ages ranged from 17 to 65. The lowest frequency (.5%) was among individuals under 23, andthe highest frequency (17.5%) was among those over 50.

c). Education Level:

Mean: 2.2

Median: 2.0

Mode: 2.0

Standard Deviation: 0.65

Approximately 53% (106 individuals) were literate. Among them, 70 individuals (35.0%) had a high level of literacy, while 24 (12%) were illiterate.

d) Economic Status:

Mean: 1.9

Median: 2.0

Mode: 2.0

Standard Deviation: 0.56

Middle economic status was most frequent, with 133 individuals (66.5%). Poor status followedwith 47 individuals (23.5%), while high economic status was the least common, with 20 individuals (10.0%).

Percentile Distribution:

Minimum: 1.0

10th-40th Percentiles: 1.0

50th Percentile: 1.5

60th-90th Percentiles: 2.0

Maximum: 2.0

This summary provides a clearer overview of the socio-demographic characteristics.

Table 2. Comparison between highest score and lowest score of frequency and percentage.

Score	Variable	Frequency	Percentage
Strongly disagree			
Highest Score	Variable "curse"	Frequencyn93	Percentage **46.5%**
(Negative social determinants resulting from superstitions, rural isolation, illiteracy, inaccurate faith, and outdated ideas***)***			
Lowest Score	Variable "physical and sexual abuse,	Frequency 7	Percentage: **3.5%**
Disagree			
Highest Score	Variable "due to sin committed"	Frequency 62	Percentage **31.5%**
(***Negative social determinants*** caused by outdated ideas, false religion, isolation, superstitions,and illiteracy)			
Lowest Score	Variable "neuro-chemical disturbance,"	Frequency 9	Percentage **4.5%**
(***Biological determinants*** arising from hereditary and physical factors)			
Neither agree nor disagree			
Highest Score	Variable "evil spirit"…	Frequency 33 ……	Percentage**16.5%**
(Negative social determinants brought on by superstitions, remote locations, illiteracy, false faith,and antiquated notions*)*			
Lowest Score	Variable "substance use,"	Frequency14	Percentage7 **%**
(***Biological determinants:*** Usually, substances are abused for pleasure and psychedelic experiences but may result from mental or psychological distress due to adverse conditions in life and impaired relationships. So this could also be triggered by psychological determinants.***)***			
Agree			
Highest Score	Variable "family divorce"	Frequency 143	Percentage 71.5**%**
(Social determinants that lead to mental or psychological pain, sorrow, stress, and envy could be triggered and result from psychological determinants.***)***			
Lowest Score	Variable "due to sin committed,"	Frequency 22	Percentage 11**%**
(Negative social determinants stemming from outmoded views, illiteracy, superstitious beliefs, and rural isolation)			
Strongly agree			
Highest Score	Variable "neuro-chemical disturbance"	Frequency 42	Percentage **21.5%**
(***Biological determinants*** originating from a genetic and physical source)			
Lowest Score	Variable "attack from devil,"	Frequency 2	Percentage 1.0%
(Negative social determinant because of superstitions, rural isolation and illiteracy faulty faith,and old ideas**)**			

Table 2.1

The table provides a comparative analysis of the highest and lowest scores for each level of agreement ("Strongly Disagree," "Disagree," "Neither Agree Nor Disagree," "Agree," and "Strongly Agree") across various variables. The scores are presented with their corresponding frequencies and percentages, along with the associated determinants (negative social or biological) influencing these perceptions.

Strongly Disagree:

a. **Highest Score**: The variable "curse" received the highest score, with a frequency of 93 (46.5%). This reflects negative social determinants such as superstition, rural isolation, illiteracy, inaccurate faith, and outdated ideas.
b. **Lowest Score**: The variable "physical and sexual abuse" had the lowest score, with a frequency of 7 (3.5%).

Disagree:

a.) **Highest Score**: The variable "due to sin committed" scored the highest, with a frequency of 62 (31.5%), linked to negative social determinants like outdated ideas, superstition, isolation, and illiteracy.

b.) **Lowest Score**: The variable "neuro-chemical disturbance" had the lowest score, with a frequency of 9 (4.5%), which is associated with biological determinants such as hereditary and physical factors.

Neither Agree Nor Disagree:

a.) Highest Score: The variable "evil spirit" scored the highest, with a frequency of 33 (16.5%), indicating negative social determinants like superstition, illiteracy, and remote locations.

b.) Lowest Score: The variable "substance use" had the lowest score, with a frequency of 14 (7%). This is considered a biological determinant but can also stem from psychological distress and adverse conditions.

Agree:

a.) Highest Score: The variable "family divorce" had the highest score, with a frequency of 143 (71.5%), highlighting social determinants leading to psychological pain, stress, and envy.

b.) Lowest Score: The variable "due to sin committed" scored the lowest, with a frequency of 22 (11%), linked to negative social determinants like superstition, illiteracy, and rural isolation.

Strongly Agree:

a.) **Highest Score**: The variable "neuro-chemical disturbance" scored the highest, with a frequency of 42 (21.5%), associated with biological determinants like genetic and physical origins.

b.) **Lowest Score**: The variable "attack from the devil" scored the lowest, with a frequency of 2 (1.0%), reflecting negative social determinants due to superstition, illiteracy, and outdated beliefs.

This comparison illustrates how various determinants, both social and biological, influence perceptions of mental health across different levels of agreement.

3.2. Comparison between the highest score and the lowest score among all variables

In the category of **highest score** among all the variables, the uppermost figure was **143** for “family divorce,” and the percentage was **71.5% (**social determinants that lead to mental or psychological pain, sorrow, stress, and envy), which came under the classification of "agree." The **lowest figure**was **33 for “**evil spirit**,” a**nd the percentage was **16.5% (**negative social determinants), which came under the classification of “neither agree nor disagree." In the category of **lowest score** among all the variables, the highest figure was 22 for “due to sin committed,” and the percentagewas **11% (**negative social determinants) under the Likert

scale of "agree." The **lowest figure** was**2** for “attack from the devil,” and the percentage was **1.0% (**negative social determinants) under the division of strongly agree.

3.3. Results in terms of determinants

The analysis of determinants in this study revealed significant insights, particularly in the realms of negative social determinants, biological determinants, social determinants, and psychological determinants.

3.3.1. Negative social determinants

Participants' responses emphasized the prevalence of negative social determinants as predominantfactors influencing mental well-being. Among these, superstitions, rural isolation, illiteracy, inaccurate faith, and outdated beliefs garnered the highest occurrence scores. Notably, within the strongly disagree category, the variable "curse" attained the highest score, while "due to sin committed" scored highest in the disagree category. In contrast, "evil spirit" received the highest score in the neither agree nor disagree category. Furthermore, the lowest score in the agree category was attributed to "due to sin committed," while "attack from the devil" garnered the lowest score in the strongly agree category.

3.3.2. Biological determinants

The analysis also revealed significant occurrences of biological determinants, particularly stemming from physical and psychological pain such as remorse, regret, and shame. These experiences often intertwine with psychological determinants, influenced by hereditary andphysical factors. For instance, "substance use" was identified as a practice for pleasure and psychedelic experiences, albeit often arising from mental or psychological distress due to adverse life conditions and impaired relationships. The lowest scores were observed in the strongly disagree category for "physical and sexual abuse" and in the disagree category for "neuro-chemical disturbance”. Similarly, "substance use" garnered the lowest score in the neither agree nor disagree category, while the variable “neuro-chemical disturbance” attained the highest score in the strongly agree category.

3.3.3. Social determinants

Social determinants emerged as significant contributors to mental distress, with factors such as pain, sorrow, stress, and envy often triggered by psychological determinants. These findings underscored the intertwined nature of social and psychological determinants in influencing mentalwell-being.

3.3.4. Psychological determinants

The results highlighted the intricate interplay between biological, social, and psychologicaldeterminants in shaping mental health outcomes. Mental illness is understood to arise from a complex interaction of biological (brain function, neuro-chemical issues, genetic predispositions, substance abuse), psychological (thought patterns, emotional responses), and social (relationship dynamics, environmental influences) factors. Thus, a comprehensive approach that addresses all these facets is imperative for effective support and the promotion of mental well-being.

3.4. Objective number 2

For the analysis of the results of objective number 2, an interview schedule consisting of six open-ended questions was developed on the basis of the study research questions. (The questionnaires were validated through pilot study using through Observation. Then**,** the data were collected usingan unstructured interview.

Table 3. Frequency, Mean, Median, Mode, Sum, Variance, and range obtained through 6 themes based on 6 research questions.

	Frequency of Financial impact	**Frequency of Social impact**	**Frequency of Emotional impact**	**Frequency of Health impact**

	1.Q.No 97	84	170	73
	2. Q. No 189	25	30	7
	3.Q No 16	185	106	7
	4.Q No 4	33	196	7
	5.Q No 11	16	98	109
	6.Q No 33	75	93	33
Mean	58.33333333	69.66666667	115.5	39.33333333
Median	24.5	54	102	20
Mode	#N/A			
Sum	350	418	**693**	**236**
Variance	5239.066667	3951.066667	3532.7	1832.666667
Range	185	169	166	102

Table 3.1 The table presents a statistical analysis of responses gathered across four impact themes—financial, social, emotional, and health—based on six research questions. Key metrics including frequency, mean, median, mode, sum, variance, and range are calculated to provide insights into the distribution of responses for each theme.

Frequency Distribution:

1. **Financial Impact**:

   a.) The frequencies range from 4 (Q.4) to 189 (Q.2), indicating variability in responses about financial concerns.

   b.) The total (sum) frequency is 350.

2. **Social Impact**:

   a.) Frequencies span from 16 (Q.5) to 185 (Q.3), highlighting diverse social effects experienced.
   b.) The total frequency is 418.

2. **Emotional Impact**:
   a.) Responses vary widely, from 30 (Q.2) to 196 (Q.4), showing significant emotional effects.
   b.) The total frequency is 693.

3. **Health Impact**:
   a.) The lowest frequency is 7 (Q.2, Q.3, and Q.4), and the highest is 109 (Q.5), indicating varying health-related concerns.
   b.) The total frequency is 236.

Statistical Metrics:

- **Mean (Average)**:
    1. Financial Impact: 58.33
    2. Social Impact: 69.67
    3. Emotional Impact: 115.5
    4. Health Impact: 39.33
    5. Emotional impact has the highest mean, indicating it is the most frequently reported theme.
- **Median (Middle Value)**:
    1. Financial Impact: 24.5
    2. Social Impact: 54
    3. Emotional Impact: 102
    4. Health Impact: 20
    5. The medians reflect the central tendency, with emotional impact consistently higher than others.
- **Mode (Most Frequent Value)**:
    1. The mode is not applicable, implying no single frequency occurred more than once.
- **Sum (Total Responses)**:
    1. Financial Impact: 350
    2. Social Impact: 418
    3. Emotional Impact: 693
    4. Health Impact: 236
    5. Emotional impact dominates in total responses.
- **Variance (Spread of Data)**:
    1. Financial Impact: 5239.07
    2. Social Impact: 3951.07
    3. Emotional Impact: 3532.7
    4. Health Impact: 1832.67
    5. Financial impact shows the largest variance, suggesting a broader spread of responses.
- **Range (Difference Between Maximum and Minimum)**:
    1. Financial Impact: 185
    2. Social Impact: 169
    3. Emotional Impact: 166
    4. Health Impact: 102
    5. Financial impact exhibits the widest range, emphasizing considerable variation in responses.

Summary:

This analysis highlights emotional impact as the most prominent, with the highest mean, sum, and median, followed by social and financial impacts. Health impact, while significant, shows lower frequencies and variance. These metrics provide a detailed understanding of how different themes are perceived and reported across the research questions.

The sum of all 6 questions in the interview schedule shows the frequencies are highest in emotionalimpact (693), and the lowest are in health impact (236). If we observe the frequencies inhierarchical order, the 2nd highest are in social impact, which is 418, and the 3rd highest are in financial impact, which is 350. In addition, the highest mean is also in emotional impact, which is115.5, and the lowest is in health impacts, which are 39.33333333. The median is again highest inemotional impact, which is 102, and lowest in health, which is 20. The results of the percentage show that the percentage is highest in emotional impact, which is 249.0950983, and the lowest is in health impact, which is 85.8291831.

Table 4. Percentage of financial impact, social impact, emotional impact, and health impact on the familiesof psychotic patients.

Percentage of financial impact	Percentage of social Impact	Percentage of emotional impact	Percentage of health Impact
1Question22.87735849	19.81132075	40.0943392	17.21698113
2Question75.29880478	9.960159363	11.95219124	2.788844622
3Question 5.0955	58.917	33.758	2.22293
4Qestion 1.66666667	13.75	81.666667	2.91666667
5Question 700854701	6.8736068	41.88034188	46.58119658
6Question 14.1025641	32.05128205	39.74355897	14.1025641
Sum 123.7417487	141.363369	**249.0950983**	**85.8291831**

Note: *Question = Questions based on the objective of the study and research questions that are used in interview schedule for data collection.*

The table provides a breakdown of percentages for the financial, social, emotional, and health impacts across six research questions. It highlights the distribution of impact types in relation to each question and summarizes the cumulative percentages for each impact category.

Question-Wise Breakdown:

1. **Question 1**:
    a.) Financial Impact: 22.88%
    b.) Social Impact: 19.81%
    c.) Emotional Impact: 40.09% (highest for this question)
    d.) Health Impact: 17.22%
2. **Question 2**:
    a.) Financial Impact: 75.30% (dominant for this question)

b.) Social Impact: 9.96%

c.) Emotional Impact: 11.95%

d.) Health Impact: 2.79% (lowest for this question)

3. **Question 3**:
    a.) Financial Impact: 5.10%
    b.) Social Impact: 58.92% (highest for this question)
    c.) Emotional Impact: 33.76%
    d.) Health Impact: 2.22% (lowest for this question)
4. **Question 4**:
    a.) Financial Impact: 1.67% (lowest for this question)
    b.) Social Impact: 13.75%
    c.) Emotional Impact: 81.67% (dominant for this question)
    d.) Health Impact: 2.92%
5. **Question 5**:
    a.) Financial Impact: 70.09% (dominant for this question)
    b.) Social Impact: 6.87% (lowest for this question)
    c.) Emotional Impact: 41.88%
    d.) Health Impact: 46.58%
6. **Question 6**:
    a.) Financial Impact: 14.10%
    b.) Social Impact: 32.05%
    c.) Emotional Impact: 39.74% (highest for this question)
    d.) Health Impact: 14.10%

Summary of Percentages:

- **Financial Impact**: Total 123.74%
  Financial impact is most significant in Question 2 and Question 5, indicating these questions strongly relate to financial concerns
- **Social Impact**: Total 141.36%
  Social impact is particularly high in Question 3, showing a stronger focus on social factors.
- **Emotional Impact**: Total 249.10%
  Emotional impact is the most dominant across the questions, with a particularly high percentage in Question 4, making it the most reported type of impact.
- **Health Impact**: Total 85.83%
  Health impact has lower overall percentages but is most prominent in Question 5.

Overall Observations:

a.) Emotional impact is the most frequently reported category, reflecting its prominence in the data.

b.) Financial impact shows significant influence, especially in Questions 2 and 5.

c.) Social and health impacts vary but are noteworthy in specific questions like 3 (social) and 5 (health).

The sum of percentages the highest percentage among all four variables was emotional impact (249.0950983%). The second highest percentage among the four variables was social impact, at 141.363369%. The third highest percentage among the four variables was financial impact (123.7417487%). The lowest percentage among the four variables was health impact, at 85.8291831%.

The result was found totally synchronized between descriptive analysis of SPSS 25 and the analysis of thematic content analysis of Microsoft Excel sheet and formulas including frequency,cumulative percentage, mean, median, mode, standard deviation, and sum of objective number 1.The results of objective number 1 and 2 are totally synchronized even though the data of the results were also synchronized with established theories and principles. It will be explained in detail in discussion and conclusion section.

4. Discussion

The outcomes of this study align closely with established theories and principles, exemplified by several instances. Firstly, our study affirms the fundamental notion within the bio-psychosocial model (BPS) proposed by George Libman Engel, an American physician and psychiatrist who practiced at Rochester, New York's University of Rochester Medical Center from December 10, 1913 to November 26, 1999, asserting that the primary perception of determinants in psychotic patients is the interplay of biological, sociological, and psychological factors. This model not only provides a theoretical framework for understanding the etiologic of mental illness but also underscores the intricate interdependence of these dimensions[24]. Consequently, mental illness emerges because of the dynamic interaction among biological, psychological, and social elements, which can concurrently serve as risk or protective factors in the onset of psychological disorders[25]

Moreover, psychological determinants, such as stress, may function both as causes and effects ofvarious human behaviors, intertwined with social and biological determinants[26].

The findings further corroborate the relevance of these determinants to psychosis, as highlighted in the theory articulated by Johannessen and Joa (2021), which emphasizes the direct relationship between psychological stressors, social pressures (e.g., financial burdens), and biological factors like neurotransmitter imbalances.

Furthermore, our study aligns with the findings of Fekadu, Mihiretu, Craig, and Fekadu (2019), indicating that emotional impacts often precede and influence subsequent social, financial, and physical consequences in human behaviour.

In addition to theoretical congruence, the investigation revealed a noteworthy sophistication and scientific understanding among participants, indicative of a departure from superstition or unfounded beliefs. Participants demonstrated perceptiveness and scientific acumen, eschewing antiquated customs and unsupported religious beliefs. However, it is worth noting that some respondents exhibited a degree of illiteracy and excessive religiosity, which influenced their perception of determinants, particularly in relation to religious views.

Furthermore, the results shed light on the intricate relationships between predictors and outcomes, echoing the principles of Equifinality and Multifocality. Various impacts, including biological, financial, social, and physical factors, can disrupt the equilibrium within families of psychotic patients, consequently altering the conditions and intensity of these impacts. This underscores thecomplex and multifaceted nature of the pathways leading to psychotic outcomes, as elucidated byresponses to our research questions[27].

5. Conclusion

The study findings reveal a complex interplay between social, biological, and psychological determinantsaffecting families of individuals with psychotic disorders, the social determinants are inherently intertwined with psychological or emotional elements. Similarly, biological determinants, while initially perceived as distinct, were found to be closely linked to psychological factors

1. Social and Psychological Determinants: While social determinants are prevalent, they often carry underlying bio-psychosocial elements, blending social factors with psychological impacts. Biological determinants, though initially perceived as separate, also connect closely with psychological factors. For example, substance abuse, categorized as a biological issue, often originates from a desire for altered states but leads to emotional distress due to negative life events, and strained relationships. Similarly, experiences of physical and sexual abuse, primarily physical, result in both physical and psychological suffering, manifesting as shame, regret, and emotional turmoil. Outdated Explanations of Mental Illness: Some explanations, such as beliefs in curses or supernatural causes, received minimal support, reflecting their incongruity with contemporary scientific understanding and indicating a shift away from these superstitions.

The findings from objective two underscore the significant emotional impact that psychotic disorders have on families, surpassing social, financial, and health-related effects. Emotional disturbances often precede and contribute to further challenges in financial, social, and physical domains.

The study also highlights the complex relationships between predictors and outcomes, aligning with the principles of “Equifinality” (different factors leading to similar outcomes) and “Multifocality” (the same factor leading to different outcomes). This interconnectedness—across biological, financial, social, and physical factors—disrupts family stability in varied ways, as seen in the study's responses to its six research questions. These insights reveal the multifaceted pathways that contribute to psychotic outcomes and their impact on families.

5.1 Implications of the study

The findings of this study highlight the multifaceted challenges faced by individuals with mental illness and their families, emphasizing the urgent need for targeted interventions at both societal and governmental levels. Financial instability emerges as a critical concern, necessitating preparedness for unforeseen crises and government-led financial subsidies to alleviate the economic burden on families. Social stigma and misconceptions, such as beliefs in supernatural causes, underline the importance of promoting mental health awareness and fostering an inclusive attitude toward individuals with mental disorders.

The study underscores the need for accessible psychological and psychiatric services, including free treatment, counselling, and therapy, particularly for vulnerable groups like unemployed youths. Addressing social determinants, such as unemployment and caste discrimination, can mitigate stress and depression,

fostering a supportive societal environment. Furthermore, regular mental health awareness programs and education for caregivers are essential to dispel superstitions and encourage timely professional treatment.

On a practical level, the study advocates for providing caregivers with support, such as free meals in hospitals and psychosocial counselling, to ease their responsibilities. Holistic care approaches, including love, affection, and a supportive environment, are vital for the recovery and well-being of patients. Prevention strategies, such as promoting regular exercise, expressing suppressed emotions, and reducing substance abuse, are also highlighted as effective measures.

Overall, the findings call for the modernization of government policies to prioritize mental health, systematic investigations into cases of mental illness, and the establishment of accessible mental hospitals. These actions, combined with societal awareness and family support, can significantly improve the quality of life for individuals with mental illnesses and their families, reducing the social and economic burden on society as a whole.

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Conflict of interest

The authors declare no conflict of interest.

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