ORIGINAL ARTICLE

A Community Prevalence Study of Psychiatric Disorders in Barangay Tenejero, City of Balanga, Bataan

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ABSTRACT

Objectives. This study aims to determine the prevalence of psychiatric disorders in the sample population in a barangay in the City of Balanga, Bataan using the MINI International and Neuropsychiatric Interview and to describe the profile of those with psychiatric disorders based on sociodemographic and health characteristics.

Methods. This is a cross sectional study from Barangay Tenejero, City of Balanga, Bataan done in 2019. Systematic random sampling was done where all zones were included. Sample size was 432 households (with at least one adult per household) based on a level of significance of 5%. Data were obtained using the sociodemographic profile, health profile, MINI International Neuropsychiatric Interview Screen and MINI International Neuropsychiatric Interview 6 done through face-to-face interview. Descriptive statistics were used in analysis.

Results. Forty-four of the participants have a diagnosis of at least one psychiatric disorder (10.50%). Of these, the most common psychiatric disorders were major depressive disorder (3.58%) followed by any psychotic disorder (1.91%) and generalized anxiety disorder (1.91%). Among the population, 3.10% have suicidal behavior. Psychiatric disorders are more common among women and people with low incomes. Among those with psychiatric disorders, mental health service utilization is low with only 4.55-6.82%.

Conclusion. This study reports for the first time the prevalence of psychiatric condition in a barangay in the City of Balanga, Bataan. Though the prevalence rate (10.50%) is low compared to other community data, the findings emphasize the need for strategies to promote mental disorder diagnosis and treatment. This study will influence and guide contextualized community mental health services and policies.

Keywords: prevalence study, psychiatric disorders, Mini International Neuropsychiatric Interview, Barangay Tenejero, City of Balanga

INTRODUCTION

Mental disorders comprise significant proportion of the global burden of disease.[1] According to the WHO Global Burden of Disease Study, mental disorders are associated with significant levels of disability, affecting a community's economic productivity indirectly.[2] Untreated psychiatric illness appears to be a burden not only on the family or caregivers, but also on the community as a whole, as the person will have a noticeable reduction in ability to function at home, school, and work.

This reduction on a person's function and eventual effect on socio-economic factors caused the World Health Organization to advocate the strengthening of mental health services since 1975.[1] To support the significance of such an endeavor, it is necessary to collect evidence-based data that demonstrates the disease's burden and aids policymaking.

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Framework in Mental Health Policy: Prevalence Study as a Significant Step

The study's framework is based on the World Health Organization's Mental Health Policy Development and Implementation Framework[1], which states that an explicit mental health policy is an essential and powerful tool for mental health. A policy, when properly formulated and implemented, can have a significant impact on the mental health of the population.[1]

The first step in mental policy development is the assessment of population's needs. The following local information is needed to determine the needs: 1) understanding the mental health needs of the population and 2) gathering information on mental health services. Part of understanding the mental health needs of the population are the assessment of prevalence and incidence of mental health disorders and problems; assessment of what communities identifies as a problem; and assessment of health seeking behavior. A reliable estimate of mental health condition is best determined by prevalence studies.

A prevalence study is widely used to assess the burden of disease in a population and to assess the need for health services. It can also be used as anchor of different policies and to eventually monitor progress in terms of severity and decline of studied diseases through time.[3]

Global Prevalence of Mental Illness

According to a 2015 review by Samy A et al.[4] on Mental Health in the Asia Pacific Region, mental health is one of the world's fastest growing major public health issues, particularly in the Asia Pacific Region. Over 300 million people are estimated to suffer from depression and anxiety, representing 4.4 percent and 3.6 percent of the global population, respectively.

Survey of community samples shows that there is 10-25% prevalence rate of mental disorders in general population across the globe.[5] A World Health Organization (WHO) international study in 1996 finds that about 25% of all attendees in primary care settings are suffering from some form of mental disorder, mostly depression and anxiety.[6]

Prevalence of Mental Illness in Asia

A meta-analysis of thirty-four epidemiological studies conducted in seven South Asian countries reveals an alarming number of people suffering from mental disorders: 122 people per 1000 population (95% CI, p = 0.06). According to the report, the prevalence of mental disorders in South Asia ranged from 6.06 to 533.73/1000 population.[7]

In Asia Pacific, the top five mental health problems in both developing and developed countries are depression, anxiety, post-traumatic stress disorder, suicidal behavior, and substance abuse disorder.[8] Depression is estimated to affect 27% of people in Asia. According to a cross-sectional study conducted in several Asian regions in 2015, major depression is most prevalent in China, Korea, Malaysia, Taiwan, and Thailand.[9] The most recent estimate of the prevalence of anxiety in Asia is 23%. Anxiety symptoms appear to be more prevalent in high-income countries such as South Korea and Japan[10,11] than in the rest of the world. These studies on the prevalence of mental illness in Asia are also similar to WHO's global prevalence, with depression remaining the most common mental illness faced by people.[12]

Prevalence of Mental Illness in the Philippines

There has been no nationwide assessment of the prevalence of psychiatric diseases in the Philippines since 2018.[13] Over the years, the Philippine Department of Health has relied on expert judgments or research conducted elsewhere to determine prevalence, disability, and treatment rates. Such estimations are overly simplistic and insufficient because it fails variances in cultural, social, political, and economic factors.[11]

A few local studies in the Philippines attempted to determine the prevalence of mental disorders in a specific population. According to Perlas et al.[14], in Region VI, the prevalence of mental health condition in the given population is 35%, with anxiety disorders being the most prevalent at 14.3%, followed by panic disorder (5.6%) and psychosis (4.3 %). According to the ASEAN Report on Mental Health in 2016[15,16], a 2006 study by Pabellon et al. found that among permanent employees of 20 national government agencies in Metro Manila, at least 20% of the 327 respondents had a possible psychiatric condition based on their screening and 12% had a comorbid psychiatric problem. Specific phobias (15%), alcohol abuse (10%), and depression (6%) are among the most common diagnoses.[15] The findings of these studies appear to be consistent with the findings that depression and anxiety are always among the most prevalent mental illnesses; however, unlike the findings of the global prevalence study, anxiety is more prevalent in the Philippine setting than depression.[16]

In 2007, the WHO[13] published a report on cases diagnosed at a facility. The distribution of diagnoses across facilities (out-patient facilities, community in-patient facilities, and mental hospitals) appears to have followed a similar pattern. Schizophrenia is the most common diagnosis (57-71%), followed by mood disorder (18-24%). Outpatient facilities, on the other hand, see more patients with substance use disorders than mental hospitals and community inpatient facilities.

According to the Integrated Mental Health Information System for mental health conditions in the Philippines, 42% of in-patients were diagnosed with schizophrenia, 15% with bipolar disorder, and 6% with a history of substance abuse in 14 government and private hospitals and health care facilities nationwide.[17]

These two WHO reports and the Integrated Mental Health Information System showed different results from other local studies showing mood and anxiety disorders to be the most common. One possible explanation for the disparity is that the cases in the two reports represent those who

actively sought consultation in mental health facilities. The majority of depressed and anxious people in the community do not seek help because of the potential stigma or perceived negative view of the afflicted.

Currently, the Department of Health (DOH), despite a lack of necessary research and data, is actively developing strategies to improve Filipinos' mental health. The DOH expects local governments to implement a mental health program that is not only accessible but also contextualized to meet the needs of individuals in the community.

The City of Balanga is among the local governments that have responded to the aforementioned initiative aimed at enhancing mental health services. Nevertheless, in the absence of localized data, the local government necessitates access to data to facilitate their decision-making processes and allocation of financial resources. Therefore, the primary objective of this study is to furnish valuable insights in this undertaking.

OBJECTIVES

The study aims to achieve the following:

1. To determine the prevalence of psychiatric disorders in the sample population in Barangay Tenejero, City of Balanga, Bataan using the MINI International and Neuropsychiatric Interview
2. To describe the profile of those with psychiatric disorders based on sociodemographic and health characteristics

Rationale

There is an urgent need to provide reliable data on the magnitude of psychiatric disorders in the catchment area where a psychiatric facility is being established in the City of Balanga. Since the psychiatric facility is located in Barangay Tenejero and with limitation of funds, the initial study was conducted in the site. This is the first to be held in both the city and the province.

This study's findings will aid mental health research by giving local data on suburban mental problem prevalence. This will help Balanga, Bataan's local governments, especially the DOH, district hospitals, and primary care units, formulate policies and appropriate funding for a larger scale provincial prevalence study. This data will also improve mental health promotion and prevention services. The expected objectives are initiatives to improve health service delivery, access to mental health treatment, access to psychiatric medications, priority of needs, improvement of health-seeking behavior, and allocation of funds to mental health service. Currently, a local government mental health ordinance is being drafted, which involves the provision of funding for urgent needs for psychiatric hospital mental health services; hence, local statistics on the prevalence of mental health conditions will be useful in this process.

MATERIALS AND METHODS

The study was a cross-sectional, descriptive study with a one-phase prevalence design that was carried out in Barangay Tenejero, City of Balanga, Bataan. This population was chosen as one of the primary recipients of mental health services in Bataan General Hospital, where a psychiatric facility is being established. The barangay officials are enthusiastic about the mental health program.

Adult non-institutionalized members of selected household of Barangay Tenejero ages nineteen to sixty-five who agreed to participate in the study met the inclusion criteria.

Adults with conditions that render them cognitively and communicatively impaired, with developmental disorders and unable to consent were excluded.

Systematic sampling was done in the study. All zones were included to increase representativeness of the population. From it, households were randomly selected through the household list. There was a blueprint of households per zone; thus, household members from each household can be easily identifiable. From the household list and blueprint, a startling point was randomly assigned. From a randomly selected household as the starting point, the next sample was the 3rd household from the starting point and so on. Every 3rd household was the interval used until the desired number of households was gathered. In cases that the household was not available during the interview, it was skipped and the rater proceeded to the next one. Raters did not return to the skipped household anymore. In the sample household, all the eligible adult household members who consented were interviewed. The principal investigator was trained by the School of Statistics in University of the Philippines, Diliman in a Survey Sampling Workshop to properly conduct the sampling of the survey.

The population of the setting is 9, 346 people[18] and 812 households. As seen in Table 1, a minimum of 432 households (with at least one adult per household) was required for this study based on a level of significance of 5%, a prevalence of substance abuse of 8% with a desired width of confidence interval of 5%, as noted from the reference article from WHO.[13] The prevalence of substance abuse of 8% was used as it yielded the highest requirement among the various disorders.

Sample size formula:

$$n \geq \frac{Z_{\alpha}^2 \times P \times (1\text{-}P)}{d^2}$$

$$n \geq \frac{1.96^2 \times 0.08 \times (0.92)}{0.025^2}$$

$$n \geq 452.39 \approx 453$$

$$n \geq deff \times \frac{N \times P \times (1\text{-}P)}{(d^2/Z^2_{1\text{-}\alpha/2})(N\text{-}1) + P(1\text{-}P)}$$

Legend:

n = minimum sample size

P = proportion of patients in the outpatient diagnosed with substance abuse = 8%

d = precision = 0.025

width of confidence interval = 2d = 0.05

Z_{α} = 1.96

deff = design effect = 1

N = 9346

Sample size per purok:

$$n_i = n \frac{N_i}{N}$$

Where:

n_i = sample size for stratum h

n = total sample size

N_i = population size of the strata

N = total population size

Computation was based on sample size formula with finite population correction. Sample population based on proportion was also identified per zone/purok as seen in Table 2.

Data collection consisted of two phases: 1) Preparation and training 2) Data generation. Phase 1 was conducted from June to July 2019 and Phase 2 was conducted from August to September 2019. In Phase 1, approval from the local government unit was gathered prior to the data gathering. Four questionnaires were used: sociodemographic questionnaires, health characteristics questionnaire, MINI International Neuropsychiatric Interview (MINI) Screen and MINI International Neuropsychiatric Interview (MINI) 6.

Table 1. Minimum Sample Size at 0.05 Level of Significance and d = 0.05 unless stated otherwise

	Population unknown	With finite population correction
WHO2007[13]		
Schizophrenia = 57%	377	363
Mood disorder = 19%	237	231
Substance abuse = 8% (d = 0.025)	453	**432**
DOH2008[16]		
Mental health = 32%	335	323
Specific phobia = 15%	196	192
Alcohol abuse = 10%	139	137
Depression = 6% (d = 0.025)	347	335
Conde2004[19]		
Mental disorder in adults = 17%	217	212
Mental disorder = 35%	350	338
APEC Mental Health[17]		
Schizophrenia = 42%	375	360
Bipolar disorder = 15%	196	192
Substance abuse = 6% (d = 0.025)	347	335

Table 2. Sample Size per Zone (Purok) in the Study

	Number of households	Sample size
Batungbakal	237	126
Lote	171	91
Banzon	56	30
Campo	24	13
Campsite Tolentino	43	23
Dona Maria	100	53
Villa Lina	181	96
Total	812	432

The questionnaires were written in Tagalog and the MINI questionnaires used were linguistically validated in Tagalog.

1. Socio-demographic characteristics included age, sexual orientation, religion, marital status, educational level, employment status, level of income
2. Health characteristics included presence of current and previous medical and psychiatric comorbidities, consultation to a psychiatric service.
3. MINI International Neuropsychiatric Interview (MINI) 6 –a brief structured diagnostic interview tool for major psychiatric disorders in DSM IV and ICD 10. Dr. David Sheehan, the author provided instructional material and license to use the MINI 6 and MINI Screen. M.I.N.I. 6 was linguistically validated by the MAPI Language Services, the exclusive coordinating center of the M.I.N.I. Validation and reliability studies were done comparing the MINI to the Structured Clinical Interview for DSM-4 (SCID-P) and Composite International Diagnostic Interview (CIDI). *"The results of these studies show that MINI has similar reliability and validity properties to both these instruments such as 0.05 – 0.75 reliability scores and 0.75 predictive values.*[20,21]" MINI was used in community- based prevalence studies done in Japan, India, Nepal, Morrocco, and France.[22-25]

   The MINI assesses the 16 most common disorders in mental health, which are: Major Depressive Disorder, Suicidal Behavior, Bipolar Disorder, Panic Disorder, Agoraphobia, Social Anxiety Disorder, Obsessive Compulsive Disorder, Posttraumatic Stress Disorder, Alcohol Use Disorder, Substance – Use Disorder (Non-alcohol/Tobacco), Any Psychotic Disorder, Anorexia Nervosa, Bulimia Nervosa, Generalized Anxiety Disorder, Organic Cause, Antisocial Personality Disorder.
4. MINI International Neuropsychiatric Interview (MINI) Screen uses only twenty-four screening questions. According to the manual of MINI "*a negative response to the screening questions usually means it is unlikely that the patient has a major psychiatric disorder.*" A positive response to any questions in the MINI Screen prompted the interviewer to ask additional questions from the MINI 6. The questionnaire was administered by the interviewer and the respondent was only be required to answer with YES or NO. There were twenty-four screening questions. Every YES answer was directed to specific structured interview for the disorder. Like the MINI 6, the MINI Screen was linguistically validated in Filipino (Tagalog).

The research was coordinated with the DOH provincial office and City of Balanga Health Office. Nine DOH nurses were trained on the study's procedure and instruments over three days. For interrater reliability, case sample exercises were done. All diagnosed cases were appropriately referred to the hospital.

The MINI scales and the subsequent 23 questions for sociodemographic and health profile reliability were examined. This was done during the case training/workshop. There appeared to be good internal consistency among the scales. Cronbach's alpha was 0.79, with an average inter-item correlation of 0.14 (0.15-0.50) and an average-measures intraclass correlation coefficient of 0.79 (0.76-0.82), indicating good reliability across the nine raters.

Phase 2 data collection was done on weekdays and holidays to reach additional households. The 15-30 minute interview began only with consent. The study lasted for eight months. Codes were employed to safeguard participant identities. Microsoft Excel for Mac encoded the data. Questionnaires were shredded after a year to protect the data.

STATA 13 analyzed the data. Using descriptive statistics, data summarized the general and clinical characteristics of the participants. Frequency was used for nominal variables, median and range for ordinal variables, and mean and standard deviation for interval/ratio variables. Analysis includes all valid data, not replacing or estimating missing variables. The study followed ethical guidelines on rights, well-being, safety, privacy, and confidentiality. It only commenced after the approval of the UPM Research Ethics Board. No potential conflicts of interest were identified. The principal investigator reported no disclosures.

RESULTS

In total, 432 households were interviewed as part of the study. Four hundred ninety-eight (498) people were recruited from there, but only four hundred nineteen (419) were included in the current study. There were 79 (15.86%) people who refused to participate, and two (0.40%) people who refused to answer the socio-demographic profile sheet for the current activity. The study's overall response rate was 84.13 percent.

Sample Characteristics

The 419 included participants had age range between 19 to 65 years old. Percent distribution of sample population based on the socio-demographic was shown in Table 3.

Table 3. Socio-demographic Characteristics of Study Participants (N=419)

Characteristics	Summary Measures
Age (in years)	40 ± 14.20
Sex	
Male	119 (28.43%)
Female	297 (71.57%)
Gender identity	
Male	116 (27.88%)
Female	296 (71.15%)
Does not identify on both (non-binary)	4 (0.96%)
Marital status	
Single	173 (41.69%)
Married	199 (47.95%)
Separated	14 (3.37%)
Widowed	29 (6.99%)
Educational attainment	
Elementary level	48 (11.57%)
High school level	144 (34.70%)
Technical/college level	219 (52.77%)
Post-graduate level	4 (0.96%)
Ability to read	
Good	293 (70.43%)
Fair	116 (27.88%)
Poor	7 (1.68%)
Employment status	
Unemployed	217 (54.52%)
Employed	181 (45.48%)
Income status	
<P 15,000	325 (79.46%)
P 16,000 – 50,000	79 (19.32%)
P 51, 000 – 100,000	4 (0.98%)
>P 100, 000	1 (0.24%)
Number of Children	
None	89 (21.34%)
1 – 2	162 (49.39%)
3 – 5	124 (37.80%)
6 – 10	41 (12.50%)
>10	1 (0.30%)
Number of Siblings	
None	10 (2.45%)
1 – 2	51 (12.50%)
3 – 5	153 (37.50%)
6 – 10	193 (47.30%)
>10	1 (0.25%)
Parents living together while growing up	
Yes	343 (82.45%)
No	73 (17.55%)
Type of parents who raised the participant	
Mother only	62 (14.90%)
Father only	12 (2.88%)
Both parents	301 (72.36%)
Others	41 (9.86%)
Educational attainment of the parents	
Elementary level	164 (39.42%)
High school level	139 (33.41%)
Technical/college level	111 (26.68%)
Post-graduate level	2 (0.48%)

It was seen that majority of the participants were from age 40 ± 14.20 years old, female sex (71.57%), heterosexuals (91.03%), married (47.95%), with one to two children (49.39%), vocational and college graduate (52.77%), with good ability to read (70.43%). The study population was with a relatively low socio-economic background given that most participants were unemployed (54.52%) and earned only less than fifteen thousand a month (79.46%). Most have six to ten siblings (47.30%), grew up with and raised by both parents (82.45%; 72.36%). Educational attainment of participants' parents ranges from primary to college level without apparent variability on the percentages on each level.

The percent distribution of the population based on their health profile was shown in Table 4. Majority of the participants perceived their health to be in good condition (65.38%). Half of the population reported to have no medical illness (66.91%) and no family history of medical problems (58.89%) but on those with medical illness, the most common were cardiovascular and metabolic diseases such as hypertension and diabetes. It was noticeable that 8.19% have mental illness in the family. Among those with family history of mental illness, nine participants said history of depression, one with autism, one with attention deficit hyperactivity disorder, two with anxiety disorders and the rest were with unknown diagnosis to the participants. It was also noted that six (1.44%) participants consulted the rural health center for psychiatric service for the past three months, and eight (1.92%) consulted the hospital. Five (1.20%) participants consulted the rural health center for a psychiatric service in the past while nineteen (4.57%) availed the services of the hospital in the past.

Prevalence of Psychiatric Disorders

Table 5 depicts the prevalence of mental disorders in Barangay Tenejero, City of Balanga. According to the MINI screen, 26.1% of the population had experienced at

Table 4. Health Profile of the Study Participants (N=419)

Characteristics	Summary Measures
Status of physical health	
Good	272 (65.38%)
Fair	133 (31.97%)
Poor	11 (2.64%)
Presence of medical Illness	
Yes	138 (33.09%)
No	279 (66.91%)
Presence of family medical illness	
Yes	171 (41.11%)
No	245 (58.89%)
Presence of family mental disorder	
Yes	34 (8.19%)
No	381 (91.91%)
Consultation for a psychiatric service in the rural health center for the past three months	
Yes	6 (1.44%)
No	411 (98.56%)
Consultation for a psychiatric service in the hospital for the past three months	
Yes	8 (1.92%)
No	409 (98.08%)
Past consultation for a psychiatric service in the rural health center	
Yes	5 (1.20%)
No	412 (98.80%)
Past consultation for a psychiatric service in the hospital	
Yes	19 (4.57%)
No	397 (95.43%)

Table 5. Prevalence of Psychiatric Disorders in Barangay Tenejero, City of Balanga, Bataan (N=419)

Conditions	Frequency (%)	95% CI
Number of persons positive on MINI screen	109 (26.01%)	21.88-30.49%
Number of psychiatric disorders	44 (10.50%)	7.73-13.84%
Number of comorbidities		
1 condition	28 (6.68%)	
2 conditions	9 (2.47%)	
3 conditions	5 (1.19%)	
>3 conditions	2 (0.47%)	
Major depressive disorder	15 (3.58%)	2.02-5.84%
Suicidal behavior	13 (3.10%)	1.66-5.25%
Low risk	5 (38.46%)	
Moderate risk	4 (30.77%)	
High risk	4 (30.77%)	
Bipolar disorder	5 (1.19%)	0.39-2.76%
Bipolar I disorder	1 (20%)	
Bipolar II disorder	5 (80%)	
Panic disorder	5 (1.19%)	0.39-2.76%
Agoraphobia	7 (1.67%)	0.67-3.41%
Social anxiety disorder	-	
Obsessive compulsive disorder	2 (0.48%)	0.06-1.71%
Posttraumatic stress disorder	1 (0.24%)	0.01-1.32%
Alcohol use disorder	3 (0.72%)	0.15-2.08%
Substance use disorder (Non-alcohol/ tobacco)	3 (0.72%)	0.15-2.08%
Nicotine	2 (66.67%)	
Clonazepam	1 (33.33%)	
Any psychotic disorder	8 (1.91%)	0.83-3.73%
Anorexia nervosa	-	
Bulimia nervosa	1 (0.24%)	0.01-1.32%
Generalized anxiety disorder	8 (1.91%)	0.83-3.73%
Antisocial personality disorder	-	

least one core symptom of any of the psychiatric disorders. From that, the number of persons diagnosed with psychiatric disorders as measured by MINI module was forty-four. Thus, using M.I.N.I, the prevalence rate of psychiatric disorders in Barangay Tenejero, City of Balanga was 10.50%. This means that one out of every ten people in the community has a psychiatric disorder. Among those diagnosed with psychiatric disorder, 2.47% has at least two comorbid psychiatric conditions, 1.19% have three comorbidities, and 0.47% have more than three comorbidities.

Major depressive disorder (3.58%), any psychotic disorder (1.91%), and generalized anxiety disorder (1.91%) were the most common psychiatric disorders. It was also clear that 3.10% of this population, or thirteen cases, exhibit suicidal behavior, with eight of them having a moderate to high suicide risk.

Psychiatric Disorders as per Sociodemographic and Health Characteristics

Table 6 shows psychiatric conditions by sociodemographic and health factors. The small number of cases prevented inferential statistics (p-value) analysis as the small number of cases might create insignificant statistical value and interpretation.

Descriptively, psychiatric problems are more common in women (20-100%) than men in this population, and they are most common in early-middle adulthood (20-45 years old). Higher-educated people had the more psychiatric conditions. Employment had no effect on the prevalence of major depressive disorder, suicidal behavior, bipolar disorder, agoraphobia, or obsessive-compulsive disorder. Unemployed participants, on the other hand, had higher rates of PTSD, substance use disorder, and generalized anxiety disorder. Across all psychiatric conditions, higher cases were reported among low-income people who earned 15,000 pesos or less per month and had just one parent.

Based on the health profile correlates, percentage of psychiatric disorders with medical comorbidity is 37.50-73%, and around 12.50-50% of the cases have genetic predisposition or with family history of psychiatric condition. It was also shown in Table 7, that the service utilization of the population with psychiatric condition was only 4.55-6.82%. Others who were diagnosed never had psychiatric consultation and subsequent treatment. However, it should be noted that from those without diagnosed psychiatric disorders, there were few who sought psychiatric consult ranging from 1.07-4.30%. Seemingly, having psychiatric disorder was not indicative of service utilization. All person with diagnosed condition/s during the study were subsequently and appropriately referred to the hospital and rural health center.

DISCUSSION

This study makes an important contribution, reporting for the first time the prevalence of psychiatric disorders using MINI and its distribution based on sociodemographic and health characteristics in the community of Barangay Tenejero, City of Balanga, Bataan. The prevalence of psychiatric disorders in the community population of Barangay Tenejero which is 10.50% seems lower compared to other studies. In local setting, the study of Perlas et al.[14] revealed 35% prevalence of mental illness with total population of 3,044 adults. While in the WHO 2007 report[13], it showed 25% of all attendees in primary care settings suffering from mental disorder with sample population coming from fifteen community residential facilities examined. In comparison with meta-analysis that included studies conducted between 1980 and 2013 around the globe[26], it reported prevalence of mental disorders ranging from 17.6% to 29.2%. These reports covered both the adolescent and adult populations. Some factors may have contributed to this study's noticeable low prevalence rate when compared to the literature. One possible reason for the difference is the larger population and inclusion of children and adolescents in other studies. Another is the use of MINI screen, in which only those with positive scores are asked to complete specific modules. This might have limited the possible cases that could be diagnosed if the whole M.I.N.I module was administered to all.

This study also finds that depression is the most common in community setting (3.58%). This is similar to the WHO 2014[23] report that states 3.3% of the total population of Filipinos suffer from depressive disorders. Based on the study of Perlas et al.[14], in Negros Occidental population, the rate for depression is almost the same (3.2% ± 0.9). The WHO Report 2014[26] and the cross-sectional study done in China, Korea, Malaysia, Taiwan, and Thailand also states that prevalence of depression is highest among other psychiatric disorders.[9]

Generalized anxiety disorder is 1.91% in the study which is lower as compared to the study of Perlas et al.[14] which is 14.3% in the general population. The rate of psychosis which is 1.91% is also lower as compared to what they found which is 4.3% in the general population. However, it is relatively the same with the prevalence rate they found in Antique which is 1.7% ± 0.5. Though, anxiety disorder is seen highest as compared with depression in the study of Perlas et al.[14], anxiety and psychotic disorders are still the most prevalent cases in their study among all other psychiatric conditions.

Significantly, the suicide rate (either suicide ideation or attempt) in this community population is high: 13 people out of 44 people with psychiatric conditions, or 3.10 percent of the total population, have considered or attempted suicide. Because there is no national suicide registry in place, the prevalence of suicide in the Philippines is unknown. However, a time trend analysis of suicide in the Philippines from 1974 to 2005 revealed that 0.23 to 3.59 per 100,000 males attempted suicide, while 0.12 to 1.09 per 100,000 females attempted suicide.[27] In a study on depressed youth[12], it was found that 13.5% of Filipino youth aged 15-27 had considered suicide at least once and 3.4% had attempted

Table 6a. Socio-demographic Characteristics across Psychiatric Disorders

Socio-demographic Characteristics	Major depressive disorder	Suicidal behavior	Bipolar disorder	Panic disorder	Agoraphobia	Obsessive compulsive disorder
Frequency (%)	15 (3.58%)	13 (3.10%)	5 (1.19%)	5 (1.19%)	7 (1.67%)	2 (0.48%)
Age (in years)	41 ± 15.31	41 ± 17.47	46 ± 16.93	48 ± 10.18	35 ± 14.35	39 ± 4.24
Sex						
Male	1 (6.67%)	1 (7.69%)	4 (80%)	2 (40%)	2 (28.57%)	1 (50%)
Female	14 (93.33%)	12 (92.31%)	1 (20%)	3 (60%)	5 (71.43%)	1 (50%)
Gender identity does not identify to both (Non-binary)	1 (6.67%)	-	1 (20%)	1 (20%)	1 (14.29%)	-
Marital status						
Single	9 (60%)	8 (61.54%)	3 (60%)	-	5 (71.43%)	1 (50%)
Married	6 (40%)	3 (23.08%)	1 (20%)	1 (20%)	2 (28.57%)	1 (50%)
Separated	-	-	1 (20%)	4 (80%)	-	-
Widowed	-	2 (15.38%)	-	-	-	-
Educational attainment						
Elementary level	-	1 (7.69%)	1 (20%)	3 (60%)	1 (14.29%)	-
High school level	5 (33.33%)	7 (53.85%)	2 (40%)	2 (40%)	3 (42.86%)	1 (50%)
Technical/college level	10 (66.67%)	5 (38.46%)	2 (40%)	-	3 (42.86%)	1 (50%)
Ability to Read						
Good	8 (53.33%)	7 (53.85%)	1 (20%)	2 (40%)	4 (57.14%)	2 (100%)
Fair	7 (46.67%)	5 (38.46%)	4 (80%)	2 (40%)	2 (28.57%)	-
Poor	-	1 (7.69%)	-	1 (20%)	1 (14.29%)	-
Employment status						
Unemployed	7 (46.67%)	8 (61.54%)	2 (40%)	3 (60%)	3 (42.86%)	1 (50%)
Employed	8 (53.33%)	5 (38.46%)	3 (60%)	2 (40%)	4 (57.14%)	1 (50%)
Income status						
<P 15,000	14 (93.33%)	13 (100%)	5 (100%)	4 (80%)	7 (100%)	1 (50%)
P16,000 – 50,000	1 (6.67%)	-	-	1 (20%)	-	1 (50%)
Number of Children						
None	5 (33.33%)	4 (30.77%)	3 (60%)	3 (60%)	4 (57.14%)	1 (50%)
1 – 2	4 (26.67%)	5 (38.46%)	-	1 (20%)	2 (28.57%)	-
3 – 5	4 (26.67%)	1 (7.69%)	1 (20%)	1 (20%)	1 (14.29%)	1 (50%)
6 – 10	2 (13.33%)	3 (23.08%)	1 (20%)	-	-	-
Number of Siblings						
None	1 (6.67%)	1	-	-	2 (28.57%)	-
1 – 2	1 (6.67%)	1 (7.69%)	-	3 (60%)	1 (14.29%)	1 (50%)
3 – 5	6 (40%)	4 (30.77%)	5 (100%)	2 (40%)	4 (57.14%)	1 (50%)
6 – 10	7 (46.67%)	7 (53.85%)	-	-	-	-
Parents living together						
Yes	13 (86.67%)	8 (61.54%)	5 (100%)	3 (60%)	6 (85.71%)	1 (50%)
No	2 (13.33%)	5 (38.46%)	-	2 (40%)	1 (14.29%)	1 (50%)
Type of parents who raised them						
Mother only	-	5 (38.46%)	-	1 (20%)	-	-
Father only	11 (73.33%)	7 (53.85%)	4 (80%)	4 (80%)	6 (85.71%)	2 (100%)
Both parents	4 (26.67%)	1 (7.69%)	1 (20%)	-	1 (14.29%)	-
Parental educational attainment						
Elementary level	5 (33.33%)	7 (53.85%)	1 (20%)	2 (40%)	1 (14.29%)	-
High school level	3 (20%)	5 (38.46%)	3 (60%)	1 (20%)	4 (57.14%)	1 (50%)
Technical/college level	7 (46.67%)	1 (7.69%)	1 (20%)	2 (40%)	2 (28.57%)	1 (50%)

Table 6b. Socio-demographic Characteristics across Psychiatric Disorders *(continuation)*

Socio-demographic Characteristics	Post-traumatic stress disorder	Alcohol use disorder	Substance use disorder	Any psychotic disorder	Bulimia nervosa	Generalized anxiety disorder
Frequency (%)	1 (0.24%)	3 (0.72%)	3 (0.72%)	8 (1.91%)	1 (0.24%)	8 (1.91%)
Age (in years)	30	24 ± 3.51	51 ± 8.62	39 ± 16.48	26	40 ± 14.51
Sex						
Male	-	2 (66.67%)	1 (33.33%)	3 (37.50%)	-	2 (25%)
Female	1 (100%)	1 (33.33%)	2 (66.67%)	5 (62.50%)	1 (100%)	6 (75%)
Gender identity does not identify to both (Non-binary)	-	-	-	-	-	1 (12.50%)
Marital status						
Single	-	-	-	5 (62.50%)	1 (100%)	4 (50%)
Married	1 (100%)	3 (100%)	3 (100%)	2 (25%)	-	3 (37.50%)
Separated	-	-	-	1 (12.50%)	-	1 (12.50%)
Widowed	-	-	-	-	-	-
Educational attainment						
Elementary level	1 (100%)	3 (100%)	-	-	-	-
High school level	-	-	-	4 (50%)	-	2 (25%)
Technical/college level	-	-	3 (100%)	4 (50%)	1 (100%)	6 (75%)
Post-graduate level	-	-	-	-	-	-
Ability to Read						
Good	1 (100%)	3 (100%)	2 (66.67%)	4 (50%)	1 (100%)	6 (75%)
Fair	-	-	1 (33.33%)	4 (50%)	-	2 (25%)
Poor	-	-	-	-	-	-
Employment status						
Unemployed	1 (100%)	1 (33.33%)	2 (66.67%)	1 (12.50%)	-	5 (62.50%)
Employed	-	2 (66.67%)	1 (33.33%)	7 (87.50%)	1 (100%)	3 (37.50%)
Income status						
<P15,000	-	2 (66.67%)	-	8 (100%)	-	7 (87.50%)
P16,000 – 50,000	1 (100%)	1 (33.33%)	3 (100%)		1 (100%)	1 (12.50%)
P51, 000 – 100,000	-	-	-	-	-	-
>P100,000	-	-	-	-	-	-
Number of Children						
None	-	1 (33.33%)	1 (33.33%)	3 (37.50%)	-	1 (12.50%)
1 – 2	-	2 (66.67%)	1 (33.33%)	2 (25%)	1 (100%)	5 (62.50%)
3 – 5	1 (100%)	-	-	3 (37.50%)	-	2 (25%)
6 – 10	-	-	1 (33.33%)	-	-	-
>10	-	-	-	-	-	-
Number of Siblings						
None	-	1 (33.33%)	-	1 (12.50%)	-	1 (12.50%)
1 – 2	-	-	-	3 (37.50%)	-	4 (50%)
3 – 5	1 (100%)	-	3 (100%)	4 (50%)	1 (100%)	3 (37.50%)
6 – 10	-	2 (66.67%)	-	-	-	-
>10	-	-	-	-	-	-
Parents living together						
Yes	1 (100%)	3	3 (100%)	5	1	8 (100%)
No	-	-	-	3 (37.50%)	-	-
Type of parents who raised them						
Mother only	-	1 (33.33%)	-	2 (25%)	-	-
Father only	1 (100%)	-	3 (100%)	4 (50%)	1 (100%)	7 (87.50%)
Both parents	-	2 (66.67%)	-	2 (25%)	-	1 (12.50%)
Others	-	-	-	-	-	-
Parental educational attainment						
Elementary level	1 (100%)	1 (33.33%)		5 (62.50%)	-	2 (25%)
High school level		2 (66.67%)	1 (33.33%)	2 (25%)	-	3 (37.50%)
Technical/college level	-	-	2 (66.67%)	1 (12.50%)	1 (100%)	3 (37.50%)
Post-graduate level	-	-	-	-	-	-

Table 6c. Health Characteristics across Psychiatric Disorders

Health Characteristics	Major depressive disorder	Suicidal behavior	Bipolar disorder	Panic disorder	Agoraphobia	Obsessive compulsive disorder
Status of physical health						
Good	4 (26.67%)	7 (53.85%)	2 (40%)	1 (20%)	5 (71.43%)	1 (50%)
Fair	9 (60%)	5 (38.46%)	3 (60%)	4 (80%)	2 (28.57%)	1 (50%)
Poor	2 (13.33%)	1 (7.69%)	-	-	-	-
Presence of medical illness						
Yes	8 (53.33%)	3 (23.08%)	3 (60%)	2 (40%)	4 (57.14%)	-
No	7 (46.67%)	10 (76.92%)	2 (40%)	3 (60%)	3 (42.86%)	2 (100%)
Presence of family medical illness						
Yes	6 (40%)	4 (30.77%)	3 (60%)	4 (80%)	2 (28.57%)	2 (100%)
No	9 (60%)	9 (69.23%)	2 (40%)	1 (20%)	5 (71.43%)	-
Presence of family mental disorder						
Yes	4 (26.67%)	2 (15.38%)	2 (40%)	2 (40%)	-	1 (50%)
No	11 (73.33%)	11 (84.62%)	3 (60%)	3 (60%)	7 (100%)	1 (50%)
Consult for a psychiatric service in the RHU for the past three months						
Yes	-	-	1 (20%)	-	-	-
No	15 (100%)	13 (100%)	4 (80%)	5 (100%)	7 (100%)	2 (100%)
Consult for a psychiatric service in the hospital for the past three months						
Yes	-	-	-	-	-	-
No	15 (100%)	13 (100%)	5 (100%)	5 (100%)	7 (100%)	2 (100%)
Past consultation for a psychiatric service in the rural health center						
Yes	1 (6.67%)	-	1 (20%)	1 (20%)	2 (28.57%)	-
No	14 (93.33%)	13 (100%)	4 (80%)	4 (80%)	5 (71.43%)	2 (100%)
Past consultation for a psychiatric service in the hospital						
Yes	1 (6.67%)	-	2 (40%)	2 (40%)	2 (28.57%)	1 (50%)
No	14 (93.33%)	13 (100%)	3 (60%)	3 (60%)	5 (71.43%)	1 (50%)

suicide. This study's relatively high rate could be attributed to the tool used. The MINI module does not further classify the suicidal behavior as to suicidal ideation, attempted suicide, aborted suicide or non-suicidal-self-injury, as compared to literature which categorized and differentiated one from the other.

Interestingly, the rate of substance use disorder (0.72%) is similar to the 0.7 %+0.4 rate reported by Perlas et al.[14]. However, this is relatively lower compared to prevalence rates in literature which is 10% on DOH 2008[16] report and 8% on the WHO 2007 report[13]. One possible explanation is the social desirability bias. There could be under-reporting of the substance use and symptoms. Due to the stigma associated with substance use and mental health disorders, individuals might under-report their actual use of substances or the severity of their symptoms. They might do this to appear in a better light, avoid judgment, or out of fear of potential repercussions (like losing a job or facing legal consequences). There might also be inaccurate reporting of frequency and quantity, meaning that even if individuals do admit to substance use, they may downplay the amount or frequency due to SDB. This can impact the categorization of substance use severity, leading to underestimations of high-risk or heavy use patterns. Another factor is the effect of the social policies. Local government of Balanga's anti-tobacco and anti-alcohol campaign, as well as the presence of Rehabilitation Treatment, which actively implements substance abuse prevention programs. Balanga has received recognition for being a smoke-free city and for its active campaign against methamphetamine and other drugs, as well as alcohol. Its active implementation of local ordinance in controlling substance and tobacco use may have contributed to the community's low prevalence of this disorder.

Epidemiological studies on bipolar disorders have suggested that the lifetime prevalence of bipolar 1 disorder in the general population is 1%[28], which is consistent with the study (1.19%). However, in studies, the prevalence of bipolar 1 (0.6%) is higher than that of bipolar II (0.4%), which contradicts the results of the study, which found more cases of bipolar II than bipolar I. Although results varied across countries, it is unclear whether these differences are due to the diagnostic tool used in each study.

The significant number of people (26.04%) who had positive or experienced at least one of the sixteen psychiatric disorders is also significant. This has implications for the development of community-based preventive and resiliency programs for mental health. Screening for mental health conditions may become part of the community mental health program and services as a result of this.

In terms of service utilization, it is clear that only 4.55-6.82% of people diagnosed with mental health disorders received care recently or in the past, from a rural health center

Table 6d. Health Characteristics across Psychiatric Disorders *(continuation)*

Health Characteristics	Post-traumatic stress disorder	Alcohol use disorder	Substance use disorder	Any psychotic disorder	Bulimia nervosa	Generalized anxiety disorder
Status of physical health						
Good	-	2 (66.67%)	1 (33.33%)	5 (62.50%)	1 (100%)	3 (37.50%)
Fair	1 (100%)	1 (33.33%)	2 (66.67%)	3 (37.50%)	-	4 (50%)
Poor	-	-	-	-	-	1 (12.50%)
Presence of medical illness						
Yes	-	-	3 (100%)	3 (37.50%)	-	6 (75%)
No	1 (100%)	3 (100%)	-	5 (62.50%)	1 (100%)	2 (25%)
Presence of family medical illness						
Yes	-	1 (33.33%)	-	4 (50%)	-	4 (50%)
No	1 (100%)	2 (66.67%)	3 (100%)	4 (50%)	1 (100%)	4 (50%)
Presence of family mental disorder						
Yes	-	-	-	1	-	1 (12.50%)
No	1 (100%)	3 (100%)	3 (100%)	7 (87.50%)	1 (100%)	7 (87.50%)
Consult for a psychiatric service in the RHU for the past three months						
Yes	-	-	-	2 (25%)	-	-
No	1 (100%)	3 (100%)	3 (100%)	6 (75%)	1 (100%)	8 (100%)
Consult for a psychiatric service in the hospital for the past three months						
Yes	-	-	-	1 (12.50%)	-	-
No	1 (100%)	3 (100%)	3 (100%)	7 (87.50%)	1 (100%)	8 (100%)
Past consultation for a psychiatric service in the rural health center						
Yes	-	-	-	1 (12.50%)	-	1 (12.50%)
No	1 (100%)	3 (100%)	3 (100%)	7 (87.50%)	1 (100%)	7 (87.50%)
Past consultation for a psychiatric service in the hospital						
Yes	-	-	-	2 (25%)	-	1 (12.50%)
No	1 (100%)	3 (100%)	3 (100%)	6 (75%)	1 (100%)	7 (87.50%)

Table 7. Percentage Distribution of Health Seeking Behavior and Psychiatric Disorders

Health Seeking Behavior	Consult	Psychiatric Disorder (MINI)	
		Present	Absent
Consult for a psychiatric service in the RHU for the past three months	Yes	2 (4.55%)	4 (1.07%)
	No	42 (95.45%)	369 (98.93%)
Consult for a psychiatric service in the hospital for the past three months	Yes	1 (2.27%)	4 (1.07%)
	No	43 (97.73%)	369 (98.93%)
Past consultation for a psychiatric service in the rural health center	Yes	3 (6.82%)	5 (1.34%)
	No	41 (93.18%)	368 (98.66%)
Past consultation for a psychiatric service in the hospital	Yes	3 (6.82%)	16 (4.30%)
	No	41 (93.18%)	356 (95.70%)

or a hospital. This suggests that a large number of people in this community sample who needed psychiatric services went undiagnosed and untreated. This disparity appears to be shared by other studies. WHO described huge treatment gaps in its 2005 Investing in Mental Health report[29], stating that only a small minority of patients with mental disorders receive even the most basic treatment. According to this report, the treatment gap for these disorders is closer to 90% in developing countries like the Philippines. Policies aimed at increasing service utilization may be beneficial in addressing the population's psychiatric concerns.

Although the study does not examine the relationship between socioeconomic and health factors and psychiatric disorders, there is an increase in the prevalence of all psychiatric disorders among populations with low income (15,000php/month salary) and female sex, with the exception of bipolar disorder and alcohol use disorder. Flores et al.[30] discovered that psychiatric conditions such as depression and anxiety are associated with female sex, age, and quality of life among Filipinos. According to a 2005 WHO report[1], unemployment and poverty, along with substance abuse, lack of education, poor nutrition, war, violence, workplace stress, and racial injustice, are risk factors for mental health issues. A larger sample size follow-up study would be useful to investigate the possible associations or correlations of the factors to psychiatric disorders in this community study.

Limitations of the Study

A number of important limitations must be appreciated in understanding the study. Fear of discrimination and stigmatization despite confidentiality might lead to non-reporting bias. Another limitation is the inclusion criteria for age which are participants ages 19-65. Most survey families include children and the elderly, which may affect psychiatric condition prevalence. The study's sample size is

another limitation. Larger samples or different barangays may give a better picture of psychiatric problems and may allow inferential statistics. Nonetheless, this study gives important data that can assist policy decision and may aid further city-wide and provincial-wide research.

CONCLUSIONS

In Barangay Tenejero, City of Balanga, the community prevalence of psychiatric disorders is 10.50%. This is low in comparison to other community studies. Major depressive disorder (3.58%) is the most common psychiatric disorder, followed by generalized anxiety disorder and any psychotic disorder (1.98%). Suicidal behavior is also prevalent in the community (3.10%). Higher rates of psychiatric condition are seen in people with low socioeconomic status and in women. Because service utilization is low, a significant number of people go undiagnosed and thus untreated.

These findings highlight the importance of screening, diagnosing, and treating community members who have psychiatric problems. These findings also highlight the importance of strengthening community-based mental healthcare services in order to address the current mental health crisis. The findings of which services should be prioritized will guide the development of a community mental health program. Future research should include the elderly and children, as well as other barangays in the City of Balanga, to investigate associated factors in psychiatric conditions and the prevalence of psychiatric conditions across all ages.

Recommendations

For further research, including children and the elderly in the community and conducting correlational analysis among psychiatric disease components may yield further significant findings. With this, larger sample sizes are needed. This study will be shared with City of Balanga's extended health board so that it may help create community mental health programs that focus on screening and diagnosis for early intervention, improving service provider accessibility, providing resources and financial planning for depression, psychotic disorder, and anxiety disorders, and creating suicide prevention, intervention, and resiliency activities.

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Statement of Authorship

Both authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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