



ORIGINAL ARTICLE

# Health Status of the Residents in Occidental Mindoro, Philippines: A Way to Make a Healthy Community

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**Abstract**

**Objectives:** Even though Philippines is widely known as exporters of health workers in the world, the Occidental Mindoro province suffers from a lack of health workers compared with the total population of each municipality. The aim of this study was to observe, identify, and understand the persisting health status, knowledge, and practices among the three selected communities in Occidental Mindoro, Philippines.

**Methods:** The study applied a survey using basic questions with three key topics, with relevance to the health condition of the villagers, such as demographics (social capital and regional characteristics), lifestyle (healthy living, and healthy lifestyle and behavior), and status or position in the society (general demographics, and personal behavior and attitudes), with a random sample of 256 adult respondents.

**Results:** Only about 54.3% rated themselves as fair/moderately healthy, and a total of 17.2% suffered from chronic diseases such as diabetes mellitus, cancers, chronic obstructive pulmonary disease, and cardiovascular disease, while 9% have been diagnosed with tuberculosis in the past 6 months. Respondents mostly have low income and low education.

**Conclusion:** The majority of the respondents have only primary and secondary education, and a very low average income; these suggest that respondents were afflicted with poverty and low educational attainment. Respondents who are

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deprived of their rights to obtain a higher education also have a higher chance of having less knowledge on their well-being. Health programs do not guarantee a healthy individual and a healthy society, but a combination of health programs and socioeconomic support can help in creating a healthy community.

## 1. Introduction

Of the 7100 islands in the Philippines, Mindoro is the oldest and the seventh largest island. Occidental Mindoro is one of the two provinces encompassed by the island of Mindoro. The majority of the people are employed in the agriculture sector; however, there are wide inequalities and impoverished peasantry, where the majority of the lands are owned by rich landlords [1]. Most of the people in Occidental Mindoro are simple literate, who can read and write a simple message [2].

Based on the 2010 Census of Population and Housing, Occidental Mindoro posted a total population of 452,971 persons and Oriental Mindoro a total population of 785,602 persons as of May 2010, and there was an annual population growth rate of 1.76% from 2000 to 2010 in Occidental Mindoro [3]. On the other hand, the increase in the population count from 2000 to 2010 was translated to an average annual population growth rate of 1.43% in Oriental Mindoro [3]. If the population growth remains rapid in the two provinces, the population will be doubled or even quadrupled by the end of the century. The continued rise in population, not to mention that it is very pronounced in developing countries (poor countries), is a major obstacle to attain sustainable development. To date, much of the discussion and policy development addressing sustainable development are focused on the economy, livelihoods, energy supplies, and urban infrastructure [4]. However, the need for health promotion, where the survival of the population depends, is being bypassed. This unfortunate fact is very evident in developing countries, where the focus is mainly on improving the economy through urban infrastructure and the like, while the need for health promotion is being understated.

In 1978, an international conference on primary health care held in Alma-Ata, now known as Almaty (Kazakhstan), expressed the need to protect and promote the health of all the people of the world. In the said conference, "health" was defined as a state of complete physical, mental, and social well-being, and not merely the absence of a disease [5]. In addition, it was stressed that "health" is a fundamental human right and attainment of the highest possible level of health is the most important worldwide social goal [5]. However, due to poverty, most people from developing countries, especially those who are living on the outskirts, are denied this so-called "fundamental human right." Therefore, the need for urgent action by all governments is warranted. In addition, to bridge the gap between the health status

of the developing and developed countries, a new order was established for economic and social development, the New International Economic Order. This order focuses to narrow the alarming gap separating the developing and developed countries, mainly concerning the health status. The said conference also appealed to the world for the attainment of the acceptable level of health.

The World Health Organization clearly understand the declaration during the International Conference on Primary Health Care, 1978, that health is a fundamental human right of a person, and that the inequality of health status between rich and poor people in a country and between developing and developed countries is simply unacceptable. Therefore, Ottawa Charter comes up with the following statement, in recognition of the International Conference on Primary Health Care, 1978: health is a resource of everyday life, and to be able to reach complete wellness physically, mentally, and socially, one should be able to realize aspirations and cope with the changes in the environment [6].

The purpose of this study is to investigate the health status of the residents from the three selected communities of Santa Cruz (Pinagturilan), San Jose (Inasakan), and Magsaysay, Occidental Mindoro. Along with the understanding of the health status of the three communities, sociocultural, economic, education, and environmental factors will be surveyed too. Finally, based on the survey results, the researchers wish to help in developing a healthy community based on the suggestions and keys sectors of the community that needed attention.

## 2. Materials and methods

### 2.1. Study setting

A cross-sectional community health status survey was conducted in three different villages in Santa Cruz (Pinagturilan), San Jose (Inasakan), and Magsaysay, Occidental Mindoro, Philippines, in October 2012. Santa Cruz is partially urban; however, Pinagturilan, one of the barangays in Santa Cruz, which is seated in the outlying areas, remains rural. The three villages we surveyed have communities where marginalized people lives and are rural villages.

Prior to the survey was conducted, participants were asked to sign an agreement letter, and the objectives of the survey were presented to the respondents during the actual survey. The sample comprised 256 inhabitants,

regardless of their age and gender. The study applied a survey using basic questions on three key topics, with relevance to the health condition of the villagers, such as demographics (social capital and regional characteristics), lifestyle (healthy living, and healthy lifestyle and behavior), and status or position in the society (general demographics, and personal behavior and attitudes). The types of questions in the questionnaire, which were a mix of open- and closed-ended questions, determined the response options.

## 2.2. Statistical analysis

The data were entered in Microsoft Excel data sheets and then exported to SPSS for Windows version 12 (SPSS, Atlanta, GA, USA) for data cleaning, data editing, and data analysis.

## 3. Results

### 3.1. General demographic characteristics

Table 1 shows the summary of the overall population demographics. The mean age of the respondents was  $40.38 \pm 1.05$  years, and they, on average, were born in the years  $1970 \pm 1.1$ . Most of the male respondents were in the age group of 41–50 years, while most of the female respondents were concentrated in the age group of 21–30 years (Table 1). The mean height and weight of the respondents were  $157.91 \pm 0.90$  cm and  $50.33 \pm 0.61$  kg, respectively. Most of the respondents were married (76.2%). On the other hand, single, remarried, divorced, separated, widowed, and others were 9%, 1.3%, 2.7%, 2.7%, 8.1%, and 14.8%, respectively. Most of the married respondents were in the age range of 21–50 years. The survey also showed that half of the respondents were born-again Christians, including Presbyterians and Methodists (43.8%), followed by Roman Catholics (33.6%), and those with no religion. Out of 256 respondents, about 96.1% had at least their early education. Almost half of the respondents (50.4%) were elementary-school graduates, 23.4% high-school graduates, and only about 16.0% college graduates. The majority of the respondents were plain housewives, and as expected, the major source of income of the respondents is agriculture. The percentage of unemployed respondents was also high (12.5%), and only 2.0% owned a business or were in services. The average monthly income of the respondents was  $1,677 \pm 73$  PHP (equivalent to almost 40 USD/month), which was lower compared to the average income of the rural community.

### 3.2. Lifestyle and health behavior

Table 2 shows the health behaviors and lifestyles of the villagers. The first row in Table 2 shows the water consumption in a day: a maximum of 34.4% drank 1001–1500 mL, followed by consumption of <500 mL

by 25.0%; only 4.7% and 16.4% drank 1501–2000 mL and >2001 mL, respectively. The types of water they consumed at their homes were tap water (35.9%), well water (26.6%), baffle purified water (9.0%), purified well water (5.5%), and purified tap water (4.3%). The household members of most of the respondents (54.3%) suffered from diarrhea because of their drinking water, and there are 25.4% death cases because of contaminated water. The fourth row of Table 2 shows the smoking prevalence, wherein 15.2% listed that they are currently smoking, 59.8% never smoke, and 6.3% smoked formerly. In the case of alcohol consumption, 19.1% drank less than one bottle, 7.0% drank 1–1.5 bottles, while 1.2% and 2.7% drank 1.5–2 and more than two bottles, respectively. The respondents reported that they were exercising for <30 minutes (24.6%), 30 minutes–1 hour (5.1%), 1–1.5 hours (3.5%), 1.5–2 hours (0.8%), and >2 hours (3.9%) daily.

### 3.3. Healthy living and health education

Table 3 shows the health status of the respondents. About 54.3% perceived themselves as moderately healthy, while 9.4% and 26.2% were very healthy and healthy, respectively. Respondents (23.4%) were diagnosed by a physician for the past 1 year, and among the illnesses were flu, fever, hypertension, cardiovascular disease, heart disease, and diabetes. The percentage of respondents who suffered from chronic diseases such as diabetes mellitus, cancers, chronic obstructive pulmonary disease, and cardiovascular disease for the past 6 months was 17.2%, while 9% have been diagnosed with tuberculosis. The respondents received vaccine (62.1%), treatment (36.3%), medical services (35.2%), and health education (74.6%). The top two areas that the respondents needed to be educated about are (1) environmental health and (2) family planning and reproductive health (data not shown in the table). The second row in Table 3 gives information on public health institutions in the three communities; where 33.6% answered that there were public health institutions in their community, 44.5% reported that these were situated usually at a distance of <1 km, and 57.8% told that these could be reached by foot. The reasons for the visit were treatment and cure (60.5%). The third row in Table 3 gives information on the availability of exercise facilities, which were situated at a distance of <1 km (60.9%), 1–3 km (15.2%), 3–5 km (4.7%), and >5 km (9.4%). Most of the respondents reached the exercise facilities by foot (78.9%). Half of the respondents (51.6%) were moderately happy for the past few weeks, while 12.1% have had suicidal thoughts for the past 1 year (data not shown in the table).

### 3.4. Characteristics of households, properties, social activities, and social cooperation

Households in Mindoro have higher female respondents (70.7%) as compared to male (24.2%).

**Table 1.** Summary of overall population demographics.

Variable	Overall population, <i>N</i> (%)
Sex	
Male	62 (24.2)
Female	181 (70.7)
Others	13 (5.10)
Age (average)	40.38 ± 1.05
Height (average)	157.91 ± 0.90
Weight (average)	50.33 ± 0.61
Marital status	
Single	20 (9.0)
Married	170 (76.2)
Remarried	3 (1.3)
Divorced	6 (2.7)
Separated	6 (2.7)
Widowed	18 (8.1)
Others	33 (14.8)
Religion	
Roman Catholic	86 (33.6)
Christian (Methodist, Presbyterian)	112 (43.8)
Muslim	0
Hindu	0
Buddhism	0
None	22 (8.6)
Others	36 (14.1)
Education	
None	10 (3.9)
Elementary undergraduate/graduate	135 (50.4)
High school undergraduate/graduate	60 (23.4)
College undergraduate/graduate/postgraduate	41 (16.0)
Others	10 (3.9)
Occupation	
Public servant	10 (3.9)
Agricultural, forestry, and fishery workers	29 (11.3)
Own business or services	5 (2.0)
Professional (doctor, lawyers, teachers, etc.)	14 (5.5)
Student	8 (3.1)
Company employee	0
Housewife	118 (46.1)
Unemployed	32 (12.5)
Others	15 (5.6)
Income (average in Philippine Pesos)	1,677 ± 73

Respondents (88.7%) answered that they had their own house, with the basic modern facilities such as a television (29.3%), a refrigerator (9.4%), and a washing machine (11.7%), while only 2.7% were connected to the Internet and 11.7% owned a motorcycle. The average number of people in a house was  $4.7 \pm 0.2$ . The respondents commonly joined political parties (23.8%) and religious organizations (16.0%). Half of the respondents answered that they sometimes participated in religious organizations; 46.5% participated in community activities one to three times within the past year. In addition, respondents also often chatted with their neighbors (84.0%), visited their neighbors (78.5%), and invited neighbors at their home (62.5%), indicating the

hospitality of the people. Sixty-one percent agreed that their community could be trusted in their community, 37.0% disagreed, while the rest had no comment. Seventy-five percent of the respondents were willing to entrust their house to their neighbors when they were away. The respondents perceived that safety in their community was mostly relatively good (35.9%), 28.9% said it to be very good, and 28.1% to be moderately good; only 2.3% responded that safety was relatively bad, and the remaining respondents had no comment. The respondents had an average of  $89.99 \pm 13.92$  close relatives and an average of  $58.66 \pm 9.25$  close friends. Most of the close relatives and friends were not pursuing a professional occupation, where 40.6% were

**Table 2.** Lifestyle and health behaviors.

Variable	Overall population, N (%)
Water consumed in a day (mL)	
<500	64 (25.0)
501–1,000	88 (34.4)
1,001–1,500	38 (14.8)
1,501–2,000	12 (4.7)
>2,001	42 (16.4)
Type of water consumed at home	
Tap water	92 (35.9)
Purified tap water	11 (4.3)
Boiled tap water	6 (2.3)
Well water	68 (26.6)
Purified well water	14 (5.5)
Boiled well water	8 (3.1)
Rainwater	12 (4.7)
Baffle purified water	23 (9.0)
Others	10 (3.9)
Diarrhea cases because of drinking water	139 (54.3)
Death cases because of contaminated water	65 (25.4)
Meal in a day (average)	2.97 ± 0.30
Sleeping hours (average)	6.96 ± 2.70
Smoking	
Current	39 (15.2)
Never	153 (59.8)
Former	16 (6.3)
Alcohol drinkers	
<1 bottle (less)	49 (19.1)
1–1.5 bottles	18 (7.0)
1.5–2 bottles	3 (1.2)
>2 bottles	7 (2.7)
Exercise	
<30 min	63 (24.6)
30 min–1 h	13 (5.1)
1 h–1 h 30 min	9 (3.5)
1 h 30 min–2 h	2 (0.8)
>2 h	10 (3.9)
Health conscious	
Yes	188 (73.4)
Moderate	49 (19.1)
No	2 (0.8)

unemployed, only 16.8% were in the government sector, and 13.7% were business professionals.

#### 4. Discussion

The medical and health needs of the people of Mindoro are taken care of by the medical and health personnel in each local government unit. However, according to a report [7], there are not enough health workers to meet the requirements of the total population in each municipality. The Philippines is known as a major exporter of health workers, yet its outskirts areas face a critical shortage of

health workers. Specifically, this survey had the following objectives: (1) collection of data at the community level that will allow the estimation of demographic rates, particularly the health status of the residents of the three communities in Mindoro; (2) measurement of the level of health status, and the awareness or knowledge of health education; (3) analysis of the indirect factors that determine the health status; (4) collection of data on family health such as immunization, health check-ups, prevalence, and diseases; and (5) collection of data on environmental health and utilization of health facilities. The survey obtained detailed information on age, gender, height, weight, marriage, religion,

**Table 3.** Health status and well-being.

Variables	Overall population, N (%)
Health status (self-rated)	
Very healthy	24 (9.4)
Healthy	67 (26.2)
Moderate	139 (54.3)
Unhealthy	10 (3.9)
Very unhealthy	13 (5.1)
Chronic illness for the past 6 mo	
Diagnosed by a physician	60 (23.4)
Tuberculosis (for the past 3 y)	23 (9.0)
Received vaccine	159 (62.1)
Received treatment	93 (36.3)
Medical services	90 (35.2)
Health education	191 (74.0)
Public health institutions	86 (33.6)
Distance (km)	
<1	114 (44.5)
1–3	33 (12.9)
3–5	9 (3.5)
>5	48 (18.8)
Mode of transportation to public health institutions	
Walk	148 (57.8)
Bike or motorcycle	19 (7.4)
Car	1 (0.4)
Others	47 (18.4)
Reason for visit	
Diagnosis and tests	21 (8.2)
Health education	32 (12.1)
Treatment and cure	155 (60.5)
Others	6 (2.3)
Exercise facility	
Distance (km)	
<1	156 (60.9)
1–3	39 (15.2)
3–5	12 (4.7)
>5	24 (9.4)
Mode of transportation to exercise facility	
Walk	202 (78.9)
Bike or motorcycle	10 (3.9)
Cars	0 (0.0)
Others	15 (5.9)

literacy and education, occupation, house and properties, social activities and social cooperation, healthy living, health status, and awareness of health education. However, the relatively small sample size (a total of 256 respondents) is a limitation of this study.

Occupation and monthly income of the respondents dictate the health status of the villagers. Since most of the respondents were female, it was expected that the highest percentage of them were housewives. However, unemployed respondents accounted for the second highest percentage, followed by those engaged in agriculture/forestry-related work. Thus, the monthly average income of the respondents is expected to be low ( $1,677 \pm 73$  PHP, which is equivalent to only 40 USD). While the average number of people in a house was  $4.7 \pm 0.18$ , the average monthly income was too low to support or meet the needs of each family member; thus, some life aspects or areas, such as education and health status, were being sacrificed.

It is an established fact that social position is related to the health status. However, we do not fully take into consideration the relationship between education and health. In this survey, we showed that not only income *per se* had impacted the health status of the villagers, but also literacy was another indicator to be considered in marginalized communities. Both literacy and educational attainment are important determinants of individual and household welfare. Economic development is largely affected by the education level and literacy, which are important indicators of development of a community. Education level is related to the health status. Education, along with the occupation (income), may exert great impact on how well we live. According to the survey conducted, people who did not attain a high-school diploma were 2.5 times more likely to be in less than very good health than college graduates [7]. In addition, another health interview survey showed that the percentage of adults whose health was reported as very good increased as levels of education increased [8]. Moreover, the report says that persons with elementary- or middle-school diploma were approximately four times more likely than those with the higher educational level to be reported as being in fair or poor health [8]. Consistent with the abovementioned survey results, our findings showed that the majority of the respondents had low education, graduating from elementary and high schools only, and only 16% earned a college degree. This suggests that the three communities surveyed were afflicted with poverty and low educational attainment, which were the major determinants of the respondents' health status.

Since the three communities we surveyed were marginalized and can be considered as rural, suicidal thoughts were also higher among the respondents. This is in accordance to the study conducted by Singh and Siahpush [9] that rural residence is a risk factor for suicide, and the suicide rate is higher among women. Moreover, in the study conducted by Rohrer et al [10],

frequent mental distress was independently associated with lower education and being female, but we suggest that the risk factors for suicide that should be targeted are poverty (income) and low-education state. In addition, only 10 people among 256 respondents answered that their community was peaceful, orderly, and happy.

The results obtained from the survey indicated that respondents rated themselves as moderately healthy and healthy, and the majority of them had received health education. However, it is obvious that they are reluctant or might have poor perception on well-being, as shown by health behaviors such as water consumption, exercise, and mental health such as suicidal thoughts. Therefore, continuous health education or health programs on environmental health, family planning, and reproductive health are needed. Moreover, the need for environmental health education related to air, water, and waste management; water quality and availability; toilet sanitation; and disease prevention is warranted. Furthermore, there is a continuous rise of the population in the province of Occidental Mindoro, to which the three communities of the respondents belong; thus, education on family planning is very essential. Reproductive health is always associated with family planning; therefore, men and women should be aware of the safe, effective, and acceptable methods of birth control. Moreover, the implementation of reproductive health programs guarantees that women go safely through pregnancy and childbirth, leading to healthy infants. However, in the society today, inequalities of reproductive health programs exist everywhere. The socioeconomic status, education level, age, ethnicity, and religion dictate the availability of these rights to the individuals.

There is a need for active engagement with international agencies and programs that support the socioeconomic needs in disadvantaged communities. Socioeconomic support will provide a good occupation or stable income to the villagers, which could meet the needs of each household, such as good education, healthy lifestyles, and good reproductive and environmental health. Health programs do not guarantee a healthy individual and a healthy society, but a combination of health programs and socioeconomic support can help in creating a healthy community.

## Conflicts of interest

The authors declare no conflicts of interest.

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## References

1. United Church of Christ in the Philippines—Southern Luzon Jurisdictional Area. Integrated Development Program for Indigenous People in Southern Tagalog (IDPIP-ST). Comparative study and integrative analyses of persisting sexual reproductive health concepts, knowledge and practices among Mangyan Tribes in selected indigenous communities in Occidental Mindoro, Philippines. Thailand: The Asian Indigenous People's PACT (AIPP); 2013.
2. National Statistical Coordination Board. Occidental Mindoro. Special ed.; 2005. Fact Sheet: FS-200504-R04-006. Calamba, Philippines.
3. National Statistics Office. Population and annual growth rates for the Philippines and its regions, provinces, and highly urbanized cities. 2010 Census and Housing Population. Available from: <http://www.census.gov.ph/tags/2010-cph> [accessed 26.02.14].
4. McMichael AJ, Butler CD. Emerging health issues: the widening challenge for population health promotion. *Health Promot Int* 2006;21(Suppl. 1):15–24. <http://dx.doi.org/10.1093/heapro/dal047>. Epub 2007/02/20, PubMed PMID: 17307953.
5. International Conference on Primary Health Care. Alma-Ata USSR; 6–12 September 1978. Available from: [http://www.who.int/hpr/docs/declaration\\_almaata.pdf](http://www.who.int/hpr/docs/declaration_almaata.pdf) [accessed 26.02.14].
6. World Health Organization. Charter for health promotion. First International Conference on Health Promotion. Ottawa: WHO; 1986.
7. Simmons J. Survey: education levels related to health status. Danvers MA, USA: Health Leaders Media; 6 May 2009. Available from: [http://www.healthleadersmedia.com/content/232588/topic/WS\\_HLM2\\_QUA/Survey-Education-Levels-Related-to-Health-Status.html](http://www.healthleadersmedia.com/content/232588/topic/WS_HLM2_QUA/Survey-Education-Levels-Related-to-Health-Status.html) [accessed 03.03.14].
8. Division of Health Interview Statistics, National Center for Health Statistics, Centers for Disease Control and Prevention. National Health Interview Survey 2009 data. Atlanta, GA, USA: Centers for Disease Control and Prevention; 2009. Available from, <http://www.cdc.gov/nchs/nhis.htm> [accessed 01.03.14].
9. Singh GK, Siahpush M. Increasing rural–urban gradients in US suicide mortality, 1970–1997. *Am J Public Health* 2002;92(7):1161–7. Epub 2002/06/27. PubMed PMID: 12084702; PubMed Central PMCID: PMC1447208.
10. Rohrer JE, Borders TF, Blanton J. Rural residence is not a risk factor for frequent mental distress: a behavioral risk factor surveillance survey. *BMC Public Health* 2005;5:46. <http://dx.doi.org/10.1186/1471-2458-5-46>. Epub 2005/05/21, PubMed PMID: 15904511; PubMed Central PMCID: PMC1173113.