

Health determinants in adults in Chimbote, Peru: A descriptive study

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Abstract

Objective

To describe health determinants in adults from the jurisdictions of the North and South Pacific Health Networks in the city of Chimbote.

Methods

A non-controlled descriptive study was carried out. Health determinants were classified in the following categories: bio-socioeconomic characteristics, lifestyle, and social and community support. For the descriptive analysis of categorical variables, relative and absolute frequencies were used.

Results

A total of 1 496 adults were included in the study. In the bio-socioeconomic determinants category, 62.2% were women and 53.3% were older adults. In the lifestyle determinants category, 52.4% did not smoke and had not ever smoked regularly, 50.5% did not consume alcoholic beverages, and 66.9% had 6 to 8 hours of sleep. In the social/community support determinants category, 53% had been treated at a health facility in the previous 12 months, 47.5% considered the distance between the health facility where they were treated and their home to be average, and 64.6% had public health insurance (SIS) from Peru's Ministry of Health (MINSA).

Conclusion

Most participants completed high school but this level of education did not result in access to higher-scale salaries. In addition, most participants owned their own homes as well as access to basic services but lived in overcrowded conditions. A sedentary lifestyle and high-carbohydrate diet were predominant in this sample, highlighting the need for education to improve health.

Key ideas

- Over time, people often adopt unhealthy behaviors and are exposed to various social conditions, and these factors function as future health determinants, affecting the occurrence of communicable and noncommunicable diseases in adulthood.
- The objective of this research was to describe the determinants of health in adults in the city of Chimbote, Peru.
- A simple descriptive study was carried out. For the descriptive analysis of categorical variables, relative and absolute frequencies were used.
- Limitations of this study include the scope of the sample (patients of MINSA health networks), which may not be representative of the population of Chimbote, despite the probabilistic sampling, and the potential for recall bias due to the use of self-reported data.

Introduction

Health is a state of complete physical, mental, and social well-being¹. An individual's health is affected by contextual conditions that, for the purpose of this research, include a set of social, economic, political and lifestyle factors that are established in the human life course, translate into future health impacts², and are therefore known collectively as determinants of health.

Considering all ages, the global population increased by 1.2%, to 7 530 million people, between 2000 and 2017. Of these, 65% are between 18 and 64 years old³. Over time people often adopt unhealthy lifestyles or behaviors (e.g., smoking, alcohol abuse, poor eating habits)⁴⁻⁶ that, with various social and economic conditions (poverty, type of residence, gender issues, and education level, among others) can affect the occurrence and co-occurrence of communicable and noncommunicable diseases in adulthood⁷⁻⁹.

Despite advances in the diagnosis and treatment of diseases, the social determinants of health have not changed, although they have become more complex¹⁰. Because of the unsatisfactory health status of populations worldwide, health systems have strengthened comprehensive primary health care, shifting attention and priorities to health promotion and disease prevention^{2,11}. The objective of this study was to describe determinants of health in adults from the jurisdictions of the North and South Pacific Health Networks in the city of Chimbote, Peru.

Methods

Design and context of the study

This was a descriptive study with a single-box design⁹. The research was conducted in the city of Chimbote. The Chimbote health system is under the jurisdiction of the North Pacific Health Network and the South Pacific Health Network. Each of the two networks includes six micro-networks. Four of the 12 micro-networks—three from the North Pacific Health Network (El Progreso, Magdalena Nueva, and Miraflores) and one from the South Pacific Health Network (Yugoslavia)—are in the city of Chimbote. All four micro-networks participated in the study. The sampling frame consisted of adults (≥ 18 years old) from the four micro-networks. A probability sample of 1 496 adults was obtained using simple random sampling.

Participants

Men and women 18 years or older who were treated in the selected health networks were considered eligible. People with mental disorders who were unable to complete the study procedures were excluded.

Ethical aspects

Permission from the North and South Pacific Health Networks was obtained before carrying out the study. Subsequently, the lead researcher obtained informed consent from each selected participant prior to applying the assessment instrument. The study was carried out between April and September 2016. No participant surveys were excluded from the study.

Instruments

The Social Determinants of Health questionnaire was adapted for Peru and validated by ten experts¹². Based on a statistical test, the instrument showed high reliability (Cronbach's $\alpha = 0.89$). The questionnaire included 30 items divided into four parts:

1. Identification data.
2. Bio-socioeconomic determinants: sex; age (young adult, 18–29 years; middle-aged adult, 30–59 years; and older adult, 60 to more years)¹²; education level; economic income; occupation of head of household; housing type, tenure (financial arrangements), and material; number of people in the household, and number sharing a bedroom; basic services received at the home, excreta elimination, and garbage disposal.
3. Lifestyle determinants: tobacco consumption, alcohol consumption, hours of sleep, frequency of personal hygiene, use of health services, physical activity, and food consumption;
4. Social/community network determinants: support from friends/family, social services support, wait time and quality of support services, and exposure to gangs.

Dependent variable: determinants of health

Determinants of health are a “set of personal, social, economic, and environmental factors that determine the health status of the person”². In this study, we describe “determinants of health” using the categories described above (bio-socioeconomic, lifestyle, and social/community support). The same categories and their subcategories were used in the analysis.

Data analysis

For the analysis, a database was created in Microsoft Excel 2016 and exported to the statistic software IBM SPSS Statistics 24.0 for data processing. For the descriptive analysis of categorical variables, absolute and relative frequencies were used.

Ethical considerations

The confidentiality described in the consent form of the original study was respected through the anonymization of the data, its restricted handling, and encrypted registration. The study was reviewed by the Institutional Research Ethics Committee of the Universidad Católica Los Ángeles de Chimbote (CIEI-ULADECH Católica), which issued authorization reports (#006-2016-CEI-VI-ULADECH-Católica) prior to its execution.

Results

Results for bio-socioeconomic determinants included the following: 62.2% of the participants were women; 53.3% were older adults; 52.2% had complete/incomplete secondary education, and 38.8% had an economic income less than 750 Peruvian soles (Table 1).

For lifestyle determinants, 50.5% did not consume alcoholic beverages; 66.9% sleep 6–8 hours; and 54.4% did not receive regular medical checkups. With regard to diet, 27.4% consumed fruit three or more times per week, and 28.5% consumed sweets/sodas less than once a week (Table 2).

For determinants related to social/community support, 53% had been seen at a health post in the last 12 months; 64.6% had the Ministry of Health (MINSA) Comprehensive Health Insurance (SIS); 52.5% indicated gangs or crime near their home; and 96.9% said they did not receive any formal/organized social support (Table 3).

Discussion

The increase in life expectancy along with the decrease in the birth rate implies aging of the population and, with it, new problems for a modern and changing society where older adults are low on the scale of social recognition. Herein lies the importance of analyzing the bio-socio-cultural, dietary, and social conditions in which this population group develops^{6,13}.

In the category of bio-socioeconomic determinants, we found that more than half of the respondents were older adults, the majority were female, and more than half had complete or incomplete secondary education. These results were similar to what was found in a study conducted in Trujillo, Peru¹⁴ (other than the proportion of age groups, as the latter sample was composed entirely of middle-aged adults). Similar results were also found in a study by Quiroz R in which more than half of the participants were women, 41% had complete/incomplete secondary education, and 75.8% were young adults¹⁵. Another study of social determinants of health carried out in Colombia found that 48.9% of the study population were middle-aged (41–64 years old), more than half (61.4%) were female, and 35.2% had studied at the undergraduate or postgraduate level¹⁶. Our results and those of the previously described studies show a relationship between age and education gaps, and the education gaps influence income, which in turn affects individuals' general quality of life¹⁷.

The majority of participants in this study reported their income as below Peruvian minimum wage (750 soles per month), and most of them said they had casual jobs. This is consistent with what was reported by residents of Piura¹⁸, who said their income was below the minimum wage, and that 74.9% of them had casual jobs, with only 0.9% unemployed, but salaries were below the minimum wage. Different results emerged in the study in Colombia, in which 88.9% of study participants had high socioeconomic status, and 37.3% reported a salary of more than six times the minimum wage Colombian, but 30% said they were unemployed at the time of the survey¹⁶. Disparities in the type of available jobs, as well as the remuneration, seem to be based on age and academic degrees, with people who have not achieved a certain level of education forced to accept poor working conditions with salaries below the minimum wage. These disparities can also affect health, as shown in studies where people with higher incomes had better self-care¹⁹.

Most of the study participants said they lived in single-family homes, but a little more than half said more than three members of the family shared a room. This is similar to the results of the studies in Piura¹⁸ and Colombia¹⁶. The large proportion of home ownership could be due to the lower cost of land during certain periods, or to the land invasions (squatter settlements) that eventually led to access to property titles when many houses were built without professional

guidance/standards. The increase in the number of family members living in the same house was not anticipated and led to overcrowding in areas with limited space^{20,21}.

More than half of the study participants said they received their water supply through household connections, and most said they had their bathroom. Fuel for cooking was either gas or electricity, most houses had a permanent power connection, and almost all participants said they had garbage collection services for trash disposal. This is similar to what was reported in the study in Piura¹⁷, and in a study in a rural community in Colombia²², where 97% had electricity and more than half (58.6%) had garbage collection services, but most (69%) lacked access to safe drinking water, and only 20.7% have sewer services. Improvements in the level of basic service provision in some countries are due to social policies developed in recent years to reduce poverty and improve quality of life and social development. However, political will and commitment of government authorities are still needed to address gaps related to these important social determinants of health²³.

In the category of lifestyle determinants, a little more than half of the respondents reported not smoking and not drinking alcoholic beverages, and most said they usually sleep 6–8 hours. More than half said they did not receive regular medical checkups, and about half said they do not go for a walk in their spare time. Similar data were reported in the study by Navarro¹⁸ in Piura. Of that study sample, 49.8% said they consumed alcoholic beverages occasionally, while 79.6% expressed concern about access to regular medical checkups at a health facility. Another study in Peru showed that 93.7% of residents in urban and semi-urban areas were not physically active²⁴, and a study in rural China reported that more than half of the respondents (86.2%) abstained from alcohol consumption but only a quarter (25.5%) did any outdoor physical activity²⁵. A more proactive lifestyle in which physical exercise is done regularly, with a better quality of sleep, would improve peoples' perception of their health²⁶.

With regard to food intake, almost all participants in our study said they consumed noodles, bread, and cereal daily and about half said they ate meat three or more times per week; only a quarter said they did not consume any fried foods. In the Piura study¹⁸, more than half (66.8%) reported daily consumption of fruit, 38.4% said they consumed fish three or more times per week, and 57% said they consumed sweets/sodas less than once per week. The study carried out in Trujillo¹⁴ found that the majority of participants (99%) consumed fruits and vegetables three times a week. A healthy diet is a known determinant for good health²⁶.

In the category for social/community support, more than half of the respondents said they had been seen at a primary-level health post in the last 12 months. These results differ from what was reported by Navarro¹⁸ and Flores¹⁴, which showed the majority of respondents had received treatment at a health facility in the last year. The results of our study suggest that at least some of the participants want to receive regular medical checkups, as well as knowledge about activities conducive to good health. A little less than half of our study participants reported an average distance between their homes and a health facility, which was similar to the results of the Flores study¹⁴,

but different than those for the Navarro study¹⁸, which found that medical treatment was accessible very close to home for most participants (78%). Proximity to a health facility is a health advantage, especially in an emergency, but also for regular care and prevention, which many participants in our study said they would appreciate.

For health insurance, most participants in this study had SIS, the comprehensive health insurance provided by MINSA. This finding is similar to what was reported by Flores¹⁴ and Navarro¹⁸. The current policies of the Peruvian government designed to support universal health coverage have also helped to promote free health care²⁷. For wait times for care, and quality of care, slightly less than half of the participants described it as “regular” (average). The study in Piura¹⁸ reported similar results, while the study in Trujillo¹⁴ had a different outcome, with almost half of the participants (46%) reporting very long wait times. However, 83 or 61% of the participants in that study said the quality of care was good. Most of the respondents in this one reported not receiving any type of organized social support, whereas respondents from some of the poorest areas in China reported 48% received these types of services²⁵. Although each person is responsible for finding ways to obtain better living conditions, access to these types of services improves the chances in attaining better health²⁵. In many cases, barriers to enjoying good health go beyond individual dispositions and capacities²².

One of the strengths of this study is that it included data from a large sample of men and women. We believe that our findings allow for better visualization of the magnitude of the problems and provide a strong reference point for future research evaluating older adults with similar characteristics and determining causality among other variables.

The main limitation of this study was the restriction of the research to health networks belonging to the Ministry of Health of Peru (patients of other health facilities were not included). Therefore, despite the probabilistic sampling, the sample may not be representative of the entire population of the city of Chimbote. Another limitation is the risk of recall bias due to the use of self-reported data. However, whenever possible, the information provided by the study participants was corroborated.

Conclusions

Our research showed that 1) most of the participants had completed secondary studies, but this educational level was insufficient for access to better salary scales, and 2) a large proportion has their own home, and basic services (electricity, water, and sewage), but lives in overcrowded housing (more than three people per room). As described above, this is due to scarce economic income that does not allow this population to improve the distribution of space²¹.

This research also found low consumption of alcoholic beverages and tobacco, but a high level of physical inactivity linked to a sedentary lifestyle, and high consumption of carbohydrates, which increases the risk of infectious and chronic diseases. Despite this risk, most of the study participants said they did not have regular medical checkups. These results highlight the need for the education sector to become involved in the health sector to improve population health².

Notes

Authorship contributions

MAVR, EZL, and JBP participated in the conception of the idea of the study. All authors participated in data collection, interpretation of results, drafting of the manuscript, and approval of the final version.

Conflicts of interest

The authors declare no conflicts of interest concerning this article.

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Table 1. Bio-socioeconomic health determinants in adults from the jurisdictions of the North and South Pacific Health Networks, Chimbote, Peru, 2016.

Sex	N (%)
Male	564 (37.71)
Female	932 (62.29)
Age	N (%)
Young adult (≥ 18 –29 years)	180 (12.03)
Middle-aged adult (30–59 years)	518 (34.62)
Older adult (60 to more years)	798 (53.34)
Education	N (%)
No formal instruction	133 (8.89)
Entry level/primary	356 (23.80)
Complete / incomplete secondary	782 (52.27)
Higher/university	136 (9.09)
Higher/non-university (technical)	89 (5.95)
Economic income	N (%)
≤ 750	581 (38.84)
751–1 000	554 (37.03)
1 001–1 400	247 (16.51)
1 401–1 800	77 (5.15)
1 801+	37 (2.47)
Occupation	N (%)
Payroll employee	262 (17.51)
Casual worker (contract/freelance/temporary)	679 (45.39)
Unemployed	372 (24.87)
Retired	169 (11.30)
Student	14 (0.93)
Housing type	N (%)
Single family	785 (52.50)
Multifamily	685 (45.78)
Neighborhood tenant farm, hut, shack	24 (1.60)
Place not intended for human habitation	1 (0.06)
Other	1 (0.06)
Housing tenure (financial arrangements)	N (%)
Renter	70 (4.67)
Caregiver / guesthouse host	92 (6.15)
Social program (e.g., nonprofit/shelter)	57 (3.81)
Rent-to-own	25 (1.67)

Owner	1 252 (83.70)
Floor material	N (%)
Dirt	194 (12.97)
Board/plank	11 (0.74)
Tile, vinyl or non-vinyl	1 050 (70.19)
Asphalt sheets	218 (14.57)
Parquet	23 (1.53)
Roof material	N (%)
Wood, mat	136 (9.09)
Adobe	34 (2.27)
Mat, adobe	115 (7.69)
<i>Material noble</i> / brick and cement	841 (56.22)
Eternit™ (fiber cement)	370 (24.73)
Wall material	N (%)
Wood, mat	146 (9.76)
Adobe	81 (5.41)
Mat, adobe	70 (4.68)
Material noble / brick and cement	1 199 (80.15)
Number of people sleeping in one room	N (%)
4+	62 (4.14)
2–3	757 (50.60)
1	677 (45.26)
Water supply	N (%)
Irrigation ditch	0 (0.0)
Tank	160 (10.70)
Water well	12 (0.80)
Public network	111 (7.42)
Home connection	1 213 (81.08)
Excreta disposal	N (%)
Outdoor	10 (0.67)
Irrigation ditch, channel	4 (0.27)
Latrine	12 (0.80)
Public bathroom	4 (0.27)
Own bathroom	1 465 (97.92)
Other	1 (0.06)
Cooking fuel	N (%)
Gas, electricity	1 397 (93.38)
Wood, coal	94 (6.28)
<i>Bosta</i> (Horse dung)	0 (0.0)
<i>Tuza</i> (corn cob)	3 (0.20)
Cow dung	2 (0.14)
Electric power	N (%)
None	9 (0.60)
Lamp (non-electric)	13 (0.86)
Generator	1 (0.06)
Temporary power connection	36 (2.40)
Permanent power connection	1 394 (93.18)
Candle	43 (2.90)
Trash disposal	N (%)
Outdoors	15 (1.00)
In the river	2 (0.13)
In a well	34 (2.27)
Buried, burned, or put in trash receptacle	1 445 (96.60)
Frequency of garbage collection services at home	N (%)

Daily	243 (16.24)
Every week, but not daily	407 (27.21)
At least twice a week	784 (52.41)
At least once per month but not every week	62 (4.14)
Usual way of disposing of garbage	N (%)
Garbage collection services	1 324 (88.50)
Mound or empty field	63 (4.21)
Specific collection receptacle	26 (1.74)
Pour down sink or drain	31 (2.07)
Other	52 (3.48)

Source: Prepared by the authors based on the study results.

Table 2. Lifestyle health determinants in adults from the jurisdictions of the North and South Pacific Health Networks, Chimbote, Peru, 2016.

Tobacco consumption	N (%)
Yes; daily	19 (1.27)
Yes, but not daily	198 (13.24)
Do not currently smoke but have smoked regularly in past	495 (33.08)
Do not currently smoke and have never smoked regularly	784 (52.41)
Alcohol consumption	N (%)
Daily	8 (0.53)
Two to three times per week	16 (1.06)
Once per week	43 (2.90)
Once per month	93 (6.21)
Occasionally	581 (38.83)
Do not consume alcohol	755 (50.47)
Hours of sleep per day	N (%)
6–8	1 002 (66.98)
8–10	482 (32.22)
10–12	12 (0.80)
Bathing frequency	N (%)
Daily	689 (46.05)
4 times per week	794 (53.07)
Do not bathe	13 (0.98)
Regular medical checkup at health facility	N (%)
Yes	681 (45.52)
No	815 (54.58)
Physical activity during leisure time	N (%)
Walking	586 (39.17)
Sports	123 (8.23)
Exercises training	27 (1.80)
None	760 (50.80)
Physical activity in past 2 weeks (20 minutes or more)	N (%)
Walking	560 (37.43)
Light gym exercises	72 (4.81)
Recreational games (low-exertion)	8 (0.53)
Running	42 (2.80)
Sports	132 (8.82)
None	682 (45.51)

Food consumption	Daily	3 or more times per week	Once or twice per week	Less than once per week	Never or almost never
	N (%)	N (%)	N (%)	N (%)	N (%)
Fruit	483 (32.28)	560 (37.43)	374 (26.0)	56 (3.74)	23 (1.54)
Meat	561 (37.50)	614 (41.04)	301 (20.12)	14 (0.94)	6 (0.40)
Eggs	289 (19.31)	423 (28.27)	523 (34.95)	246 (16.44)	15 (1.00)
Fish	282 (18.85)	437 (29.21)	545 (36.46)	184 (12.29)	48 (3.20)
Noodles	977 (65.30)	234 (15.64)	204 (13.63)	23 (1.53)	58 (3.87)
Bread, cereal	852 (56.95)	260 (17.37)	164 (10.96)	191 (12.76)	29 (1.93)
Vegetables	555 (37.09)	474 (31.68)	293 (19.58)	90 (6.01)	84 (5.61)
Legumes	213 (14.23)	373 (24.93)	604 (40.37)	173 (11.56)	133 (8.89)
Cold meat	70 (4.67)	295 (19.71)	454 (30.34)	485 (32.41)	192 (12.83)
Dairy	257 (17.17)	479 (32.01)	495 (33.08)	188 (12.56)	77 (5.14)
Sweets, sodas	211 (14.10)	224 (14.97)	277 (8.51)	427 (28.54)	357 (23.86)
Sugary drinks	237 (15.84)	335 (22.39)	282 (18.85)	267 (17.84)	375 (25.06)
Fried food	200 (13.36)	327 (21.85)	229 (15.30)	340 (22.72)	400 (26.73)

Source: Prepared by the authors based on the study results.

Table 3. Social/community support health determinants in adults from the jurisdictions of the North and South Pacific Health Networks, Chimbote, Peru, 2016.

Health facility visited in last 12 months	N (%)
Hospital	397 (26.54)
Health clinic	90 (6.01)
Health post	794 (53.07)
Private clinic	126 (8.43)
Other	89 (5.95)
Distance between health facility and home	N (%)
Short	298 (19.91)
Average	711 (47.53)
Far	251 (16.77)
Very far	104 (6.96)
Does not know	132 (8.83)
Type of insurance	N (%)
<i>EsSalud</i>	377 (25.20)
SIS-MINSA	967 (64.64)
<i>Sanidad</i>	27 (1.80)
Other	125 (8.36)
Wait time	N (%)
Very long	175 (11.70)
Long	332 (22.19)
Average	725 (48.30)
Short	115 (7.69)
Very short	72 (4.82)
Does not know	77 (5.26)
Quality of care	N (%)
Very good	115 (7.68)
Good	462 (30.89)
Average	729 (48.73)
Bad	74 (4.95)
Very bad	26 (1.74)
Does not know	90 (6.01)
Gangs or crime near home	N (%)

Yes	785 (52.47)
No	711 (47.53)
Informal social support	N (%)
Family	738 (49.33)
Friends	48 (3.20)
Neighbors	15 (1.00)
Spiritual advisors	14 (0.93)
Coworkers	7 (0.46)
None	674 (45.05)
Formal social support	N (%)
Organizations that help the sick	5 (0.33)
Social Security (Free access to health benefits and pensions)	19 (1.27)
Employers	7 (0.46)
Shelters (host institutions)	2 (0.13)
Volunteer organizations	13 (0.86)
None	1 450 (94.94)
Social services	N (%)
<i>Pensión 65</i>	
Yes	0 (0.0)
No	1 496 (100.0)
<i>Comedor Popular (soup kitchen)</i>	
Yes	0 (0.0)
No	1 496 (100.0)
<i>Vaso de Leche ("Glass of Milk") social assistance program</i>	
Yes	0 (0.0)
No	1 496 (100.0)
Other	
Yes	0 (0.0)
No	1 496 (100.0)

Source: Prepared by the authors based on the study results.

Abbreviations: EsSalud, Contributory public health insurance (obtained through employment); SIS-MINSA, Comprehensive Health Insurance (*Seguro Integral de Salud*) of the Ministry of Health; Sanidad, Health insurance of the Armed Forces (army, navy, air force of Peru) and the National Police of Peru; Pensión 65, National Program of Solidarity Assistance of Peru.

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