



THE UNIVERSITY OF PAPUA NEW GUINEA
SCHOOL OF MEDICINE AND HEALTH SCIENCES

P. O. BOX 5623
BOROKO,
NATIONAL CAPITAL DISTRICT
PAPUA NEW GUINEA

FAX: (+ 675) 3243827
TELEPHONE: (+ 675) 3243811;
(+ 675) 3250809

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FINAL REPORT: ANALYSIS OF QUESTIONNAIRE DATA

SIMBU MEDICAL STUDENTS PROJECT: 2017

**SIMBU PROVINCE, PNG, SURVEY IN THREE DISTRICTS
OF HOUSEHOLD AWARENESS OF IODIZED SALT,
HOUSEHOLD USE OF SALT CONDIMENTS AND FLAVOURINGS
AND POTENTIAL IODINE FORTIFICATION FOOD VEHICLES**

Sub-title: *Health Education to Eradicate Iodine Deficiency in Simbu Province, PNG*

This report summarizes the findings of the above-captioned survey component of a project that also covered health education to the residents after the survey was conducted. Twenty students from Simbu in the School of Medicine and Health Sciences (SMHS) in University of PNG (UPNG) participated in the fieldwork. This fieldwork, which included one month of survey data collection by questionnaire and raising awareness, ran from 18 December, 2017 to 15 January, 2018; a total of 32 (thirty two) days, including breaks, with three more days, up to 18 January, 2018 used for additional compilation and documentation. The questionnaire was made up of two sections: Socio-Demographic (7 questions) and Salt awareness (18 questions). The students brought the completed questionnaires to the project coordinator in SMHS UPNG. The questionnaires were then coded and the data entered into an Excel database. The data was analysed in the Division of Public Health SMHS UPNG using the Statistical Package for Social Sciences (SPSS) software version 23.0 International Business Machines Corporation (IBM CORP), Chicago, USA.

SOCIO-DEMOGRAPHIC SECTION:

Although residents of all six (6) Simbu districts were planned to be surveyed in the original proposal, only those of three (3/6; 50%) districts were able to be reached for both the survey and awareness components of the project, while the remaining three Simbu districts received only the awareness component.

The students could not reach some of the selected locations in the districts because of bad road conditions, tribal fighting, politically related violence and other ethnic issues. Figure 1 is a map of the districts of Simbu province, also showing the location of Simbu in PNG.

Table 1 summarizes the locations (districts) of the 188 participants interviewed. Of the 188 participants 72.3% (136/188) were females and 27.7% (52/188) were males. When distributed according to districts, 64.4% (121/188) were in Karamui-Nomane, 21.8% (41/188) in Sinasina-Yongomugl and 13.8% (26/188) in Kundiawa-Gembogl.

Table 1: Number (%) of participants (n=188) surveyed by district.

Location (Districts) surveyed	N (%)
Karamui-Nomane	121 (64.4)
Sinasina-Yongomugl	41 (21.8)
Kundiawa-Gembogl	26 (13.8)
Total	188 (100.0)

Figure 1. Simbu Map (2011 census)

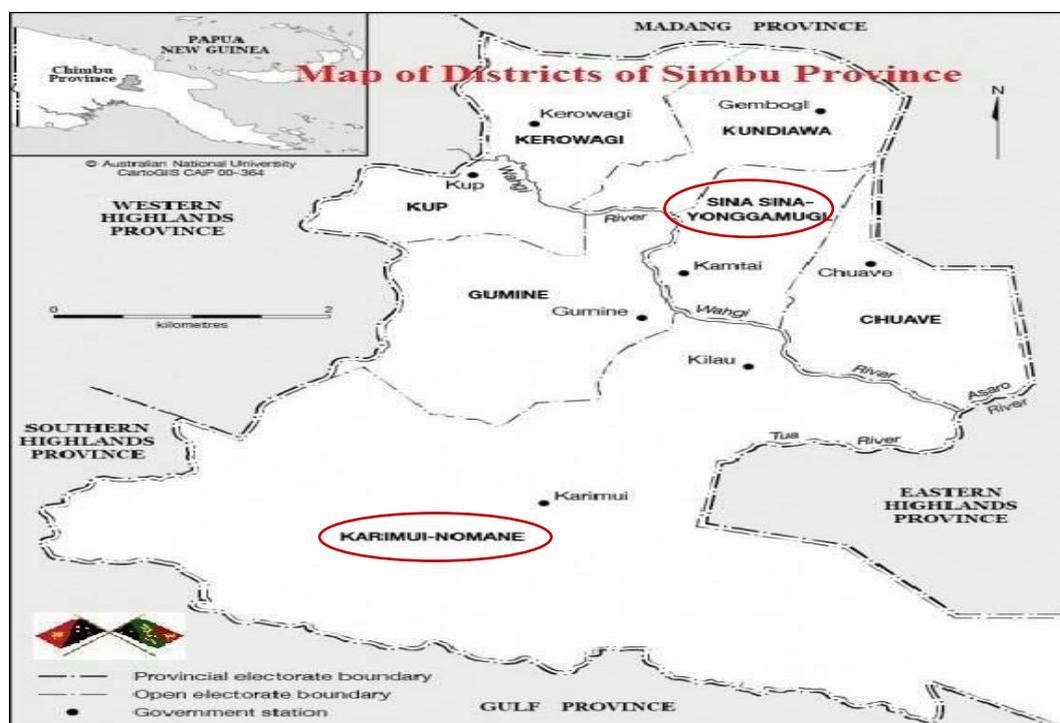


Table 2 shows the education level of the participants by gender. One third (33.0%) of all the participants had no education. The largest group, 43.6%

(82/188), had primary education; 21.3% (40/188) had secondary education and only 2.1% (4/188) were university educated. The females were significantly ($p < 0.001$) less educated than the males. Of the 62 (33.0%) participants with no education 90.3% (56/62) were females and 9.7% (6/62) were males. Furthermore, as shown in Table 2, while more than one-third (34.6%) of the males had secondary education, for females, this proportion was only 16.2%.

Table 2: Education level of participants (n=188) by gender, N (%).

Educational level	GENDER		Total
	F	M	
None	56 (41.2%)	6 (11.5%)	62 (33.0%)
Primary	57 (41.9%)	25 (48.1%)	82 (43.6%)
Secondary	22 (16.2%)	18 (34.6%)	40 (21.3%)
University	1 (0.7%)	3 (5.8%)	4 (2.1%)
Total	136 (100.0%)	52(100.0%)	188(100.0%)

Table 3: Ages (years) of participants

Age in yrs	Female (n = 136)	Male (n = 52)	All (n = 188)
Mean	34.2	33.9	34.1
Std dev (SD)	10.6	10.3	10.5
Median	33.0	33.5	33.0
Range	16.0 – 63.0	20.0 – 60.0	16.0 – 63.0

Table 3 shows the age distribution of the participants according to gender. The ages of all the participants ranged from 16 to 63 years, the mean age of all the 188 participants was 34.1 ± 10.5 years (Mean \pm SD). For the marital status of the participants, 86.2% (162/188) were married, 11.2% (21/188) were single, and the remaining 2.7% (5/188) were either separated/divorced or widowed/widowers. The participants were separated into three employment groups; most of them, 86.7% (163/188) were subsistence farmers, 12.2% (23/188) were self-employed, and the remaining 1.1% (2/188) was employed.

SALT AWARENESS SECTION:

Salt use by and local salt availability in the communities of the participants:

A total of 88.8% (167/188) of the participants reported having salt in the house on the day of their interview. Of the remaining 11.2% (21/188) who reported not having salt on the day of the interview, 3.2% (6/188) of them had salt in the house the previous day, and a further 4.8% (9/188) had salt in the house the last week, while the remaining 3.2% (6/188) did not have salt last week, either. When asked how frequently they put salt in their family cooking, 45.7% (86/188) said daily, and 42.6% (80/188) reported several times a week; 8.0% (15/188) used salt either once a week or monthly; and 3.7% (7/188) said less monthly.

All the 188 participants said salt was available in the local shop/market where food was commonly sold. The 21 participants who reported not having salt in the house today were then asked why their household didn't buy salt? (*NB: This group should've been asked why they didn't have salt in the house today. Not why they didn't buy salt*) The largest group of 57.1% (12/21) said that it was too expensive, 52.4% (11/21) said that they bought it sometimes, but not every day, and 23.8% (5/21) said that it was not always available. [*NB: Here, the responses added up to more than 21 who didn't have salt in the house because some of them responded with a combination of more than one of these responses*].

The participants were also asked if their household used anything else to give the food a salty taste. A total of 75.5% (142/188) responded positively, while 23.4% (44/188) said no, and 1.1% (2/188) of them didn't know if their household used anything else.

Then the 142 that uses other things to give a salty taste were all asked what they used to give food a salty taste. A total of 77.5% (110/142) reported that they are using bullion-cubes only, while 2.7% (5/188) used bullion and non store-bought seasoning, and 0.5% (1/188) used bullion together with salty water from the river or sea. Another 16.2% (23/142) reported using non shop bought combinations of ginger, onions, herbs, chillies, tomatoes, parsley, garlic and tree leaves. 3.5% (5/142) used shop-bought seasonings, and 1.4% (2/142) used salty water from the river or sea only; 23.4% (44/188) did not give any response.

When this 142 participants who used these other items were asked how often they used the flavouring(s) reported, only 7.7% (11/142) responded daily,

28.9% (41/142) responded several times per week; the largest group 42.3% (60/142) responded once a week, and 21.8% (31/182) reported using them less than once a month.

Knowledge and use of iodized salt by the participants:

Asked if all the participants had ever heard of iodized salt, 26.6% (50/188) said they had, 69.1% (130/188) said that they had not and 4.3% (8/188) were not sure. Having heard of iodized salt was associated with both gender and educational level, with χ^2 tests showing that in both instances more of the males (39 vs 22%; $p=0.023$) and more of the higher educated participants ($p<0.001$) had heard of iodized salt than did their female and less educated counterparts, respectively.

When asked if iodized salt was easily available and affordable, would their household purchase it, 79.3% (149/188) said yes, that their household would purchase it.

Other potential iodine fortification food vehicles:

Rice, wheat flour and other wheat products were explored as possible food iodization vehicles. Similar to the salt questions that opened the survey, the survey participants were asked separately if they had these two grains or products in their household today, yesterday or last week. Both grains were reported by similar proportions in the surveyed households. When asked if they have rice in their home today, 31.9% (60/188) said yes; 12.2% (23/188) had rice in their home yesterday, 13.8% (26/188) had rice in their home last week. For wheat, 30.3% (57/188) had wheat in their home today, 11.7% (22/188) had wheat in their home yesterday, and 18.1% (34/188) had some wheat or wheat products in their home last week. 68.1% (128/188) of the participants had neither grain in their house today; while 17.6% (33/188) reported having both rice and wheat flour in the home today, 14.4% (27/188) had one of them in their house today.

For wheat, the participants were asked which wheat products they had in their household, and they could choose as many as necessary. Noodles or pasta were by far the most popular wheat products mentioned as being in the households of 44.7% (84/188) of the participants. Wheat flour was the next most common, mentioned by the participants, 18.6% (35/188) of them. 6.9% (13/188) of the participants mentioned crackers or biscuits; 4.3% (8/188) mentioned scones or doughnuts, and 3.2% (6/188) mentioned bread or buns or rolls made from wheat. No other wheat products were mentioned.

Looking at all the different wheat products, 41.5% (78/188) of them had no wheat products in their homes. The largest number, 47.9% (90/188) of the

participants reported to have one wheat product in their home; 5.3% (10/188) had two wheat products at home; 3.2% (6/188) had two wheat products at home; 1.1% (2/188) had 4 wheat products and also 1.1% (2/188) had 5 wheat products in their homes.

SUMMARY:

This survey of 188 adults from as many households in three of the six districts in Simbu province aimed to find out about household awareness of iodized salt, household use of salt condiments and flavorings and potential iodine fortification food vehicles. Though all the participants said salt was available in the local shops, only 88.8% (167/188) of them reported having salt in their home on the day of the survey. 45.7% (86/188) put salt in their cooking daily and 42.6% (80/188) use salt several days a week, with around 12% using salt in their cooking less than weekly. Interestingly, bullion-cubes were used by 77.5% (110/188) of the participants as the most common salt flavoring in the households and a small group that used various other flavorings to get a salty taste, such as ginger, onions, chilis, garlic and other herbs and tree leaves.

While the majority used salt for flavoring, only 26.6% (50/188) had heard of iodized salt. Interestingly, 79.3% (149/188) of the participants said that if iodized salt was available and affordable, they would buy and use it. Having heard of iodized salt was associated with being a male and educated at secondary level or above, the latter of which made up only 23.4% of all the participants, 40.4% of the males and 16.9% of the females interviewed in this project.

Wheat product and rice possession and use were also queried, and both grains were used by similar proportions of households. While more than two-thirds (68.1%) of households did not consume either grain anytime since last week, about a third (30-32%) had either grain in the home on the day of the survey, and 18% had both. An additional 12% had either grain yesterday; and a somewhat greater proportion had it last week. Noodles were the most common wheat product consumed, followed by flour.

In summary, while most of the participants had not heard of iodized salt, most said they would buy it if it were available and affordable, and all said that salt was available in their local food shops. Whereas in terms of frequency of consumption and possession, salt seems to be the most promising food fortification vehicle, bullion and noodles might be the next products to consider for fortification, as these were also fairly common foods, with bullion being much more popular than noodles. Noodles, being one of the ultra-processed foods, might not be a good choice, however, for health reasons.

NB: The spreadsheet is available on request for further data analysis

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Data analysis, interpretation and editing:
Prof. G. Guldán & Assoc Prof. VJ Temple
SMHS UPNG

Project coordinator: A/Prof. VJ. Temple



Coordinator, Micronutrient Research Lab,
Division of Basic Medical Sciences,
School of Medicine and Health Sciences,
University of PNG
templevj@upng.ac.pg; templevictor@gmail.com
www.victorjtemple.com

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Report submitted to Dr. Hanifa Namusoke, Nutrition Specialist UNICEF PNG.