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Sugar-Sweetened Beverage (SSB) and Alcoholic and Caffeinated Beverage (ACB) Intake and Their Effect on the Sleep Quality of Selected Night Shift Call Center Agents Working in Mandaluyong City

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Abstract

Excessive consumption of sugar-sweetened beverages, alcohol, and caffeine is linked to unhealthy behaviors, including poor sleep quality. This study aimed to look at sugar-sweetened beverage (SSB) and alcoholic and caffeinated beverage (ACB) intake and their effect on the sleep quality of selected night shift call center agents working in Mandaluyong City. A cross-sectional research design was used, and data were collected through an online questionnaire distributed to 247 qualified participants. Results showed that the most consumed beverage by the respondents was water, with an average amount of 1,187.66 ± 553.37 mL/day. They also habitually drank fruit juices, soft drinks, sweetened juice drinks, and whole milk. The respondents' beverage intake exceeded the recommendations for both SSB and ACB. Almost all (88.26%) of them are categorized to have poor sleep quality. Most respondents with poor sleep quality consume more ACBs (61.13%) than SSBs (38.87%). On the other hand, most respondents with good sleep quality consume more SSBs (55.23%) compared to ACBs (44.77%). This research contributes to the expanding body of information on the health impacts of SSB and ACB consumption. It emphasizes the need for nutrition-focused measures to minimize their intake and promote healthier alternatives.

Keywords— *alcoholic and caffeinated beverage, call center agent, sleep quality, sugar-sweetened beverage*

1 Introduction

1.1 Background and Rationale

Sugar-sweetened beverages, often known as SSBs, are any liquids that have been sweetened with added sugars in a variety of forms, including honey, fructose, corn sweetener, and brown sugar [1]. SSBs include sweetened juice, soft drinks, tea, coffee, and energy drinks. In the Philippines, consumption of sugar-sweetened drinks increased by 44% between 2005 and 2015 [2]. In 2005, Filipinos drank 14.9 grams of sugar per capita per day from SSBs alone, and by 2015, that number had increased to 21.4 grams. To put it into perspective, the Daily Nutritional Guide Pyramid (DNGP) for Filipino adults recommends five to eight teaspoons or 21 to 33 grams of sugar per day [3]. Furthermore, the intake of SSBs and alcoholic and caffeinated beverages (ACBs) contributes to an increase in the individual's overall calorie consumption [4]. ACBs include soft drinks, coffee, tea, beer, wine, hard liquor, and energy drinks. These beverages are connected with cardiometabolic outcomes, and the presence of sugar in SSBs is associated with type 2 diabetes and dental caries in adults [4].

Consumption of SSBs and ACBs is linked to less healthy behaviors. A recent study of more than 18,000 individuals headed by experts from the University of California, San Francisco, found that those who slept for five hours or less each night were much more likely to consume significantly more sugary caffeinated beverages, such as sodas and energy drinks. Those who slept for fewer than 5 hours, according to models with all the necessary adjustments, consumed 21% more SSBs [5]. Furthermore, individuals with a middle school education or more had the greatest consumption of ready-to-drink SSB, while those with a high school diploma or below had the lowest [6].

Sleep quality is generally referred to as the ability of an individual to fall asleep and stay asleep every day [7]. Moreover, a person's level of self-satisfaction with the entirety of their sleep experience is the defining characteristic of their sleep quality [8]. Based on the Pittsburgh Sleep Quality Index (PSQI), an individual's overall sleep quality can be determined through seven components: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, daytime dysfunction, and use of sleep medication [9].

Agents working at call centers are responsible for managing incoming and outgoing calls from customers on an organization's behalf [10]. These agents could be responsible for various tasks, such as responding to customer complaints, answering questions about accounts, or providing product support. Working the night shift at a business process outsourcing (BPO) company in the Philippines is connected with increased occupational safety and health risks, including sleep problems, weariness, and eye strain [11]. A call center agent's age, gender, and number of years working at a company are some factors linked to lifestyle-related disorders [12]. Additionally, long working hours differ by shift work schedules and are linked to a higher risk of developing diabetes [13].

Loverio and Guevarra [14] found that the most frequent drinks that are made accessible to call center agents are free coffee and juice that are supplied by BPO businesses. Fast food and rice meals from restaurants, convenience shops, or supermarkets meet most dietary requirements. In addition, the most popular reasons people gave for eating at fast food places frequently were taste, convenience, and speed of service. In line with this, fast food includes a variety of ingredients that are typically considered harmful. It contains many processed preservatives and components and a high proportion of sugar, salt, and saturated or trans fats. With the information presented and variables in mind, this study aimed to examine SSB and ACB intake and their effect on the sleep quality of selected night shift call center agents working in Mandaluyong City. Specifically, it intended to describe the sociodemographic characteristics of the respondents, characterize their SSB and ACB intake, assess their sleep quality, and analyze the effect of SSB and ACB intake on the sleep quality of the respondents.

1.2 Conceptual Framework

Figure 1 shows the conceptual framework of the study. It focused on SSB and ACB intake and their effect on the sleep quality of selected night shift call center agents working in Mandaluyong City. The profile of the call center agents was collected, and the information that is gathered under this factor can influence the beverage consumption of the chosen respondents. Beverage consumption refers to the frequency and amount of SSB and ACB consumed by the selected night shift call center agents working in Mandaluyong City. From the presented literature, it is known that these can affect an individual's sleep quality, and from there, SSB and ACB intake and sleep quality of the chosen respondents were determined.

Figure 1.
Conceptual Framework of the Study

2 Methodology

2.1 Locale of the Study

The target respondents of the study were selected night shift call center agents currently working for a BPO company in Mandaluyong, Metro Manila. The study was done from February 2023 to August 2023. Calling for respondents and data collection commenced on March 25, 2023 until May 25, 2023. The research was conducted using an online Qualtrics form distributed through the participants' contact information, such as their emails, Facebook profiles, Messenger, Viber, or any other accessible means.

2.2 Research Design

The study utilized a cross-sectional research design. Data was collected and analyzed at a single point in time for this research. In this study, the participants were chosen according to certain factors that interest the researcher [15]. This approach is often used to conclude potential relationships and collect early data that may be utilized to support more research and testing [16]. In line with this, the study had a sample of selected night shift call center agents working at a BPO company in Mandaluyong City. An online questionnaire was used to obtain respondents' sociodemographic profiles, work-related information, habitual beverage consumption, and sleep quality.

2.3 Sampling Method and Sample Size Determination

Purposive sampling was utilized in this study. This is also known as judgmental, selective, or subjective sampling. It is a non-probability sampling method in which researchers use discretion in

selecting survey respondents from the community. Purposive sampling was employed since the researcher had sufficient information on the study's purpose [17]. This enables him to appropriately pick and approach eligible survey participants utilizing online platforms like Qualtrics. This method chooses all group participants because they meet a particular profile.

Since the researcher utilized the purposive sampling method, there was no definite method to obtain a concrete number of respondents. Furthermore, no formula exists to determine the sample size for purposive sampling. Instead, decisions must be made based on the anticipated heterogeneity of regions, population groups, locations, and individuals. Another method a statistician suggests to the researcher is to find similar studies and use this as a baseline for getting an estimated number of respondents. In the study of Loverio and Guevarra [14], data from 225 BPO employees in Metro Manila was gathered. This sample size was the basis of the researcher, along with an additional 10% of the 225 BPO workers to compensate for respondents the researcher could not contact. After adding 10% to the initial sample size, the final sample size for this study was 247 respondents.

2.4 Data Collection

The data collection procedure started with creating an online questionnaire through Qualtrics. The questionnaire was divided into three sections: the sociodemographic profile of the respondents, the Beverage Intake Questionnaire (BEVQ-15), and the Pittsburgh Sleep Quality Index (PSQI). The BEVQ-15 is a beverage intake questionnaire that assesses the habitual average daily intake of 15 different beverage categories, in addition to the total amount of SSB and the total amount of liquids in adults [18].

On the other hand, the Pittsburgh Sleep Quality Index (PSQI) [9] is a self-rated questionnaire that evaluates an individual's sleep quality and disturbances. Nine separate questions are used to create seven components (subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, daytime dysfunction, and use of sleep medication). The PSQI comprises 19 self-rated questions and five-bed companion or roommate-rated questions. It is crucial to note that the self-rated questions are the only ones included in the scoring. The answers to the self-rated questions are combined to yield the seven component scores, each having a 0 to 3-point range. A score of "0" signifies no difficulty, while a score of "3" denotes severe difficulty in the context of the self-rated question. The sum of the seven component scores yields a "global" score ranging from 0 to 21 points. A score of "0" indicates no difficulty, and a "21" indicates severe difficulties in all areas of the PSQI.

After the online questionnaire was finalized, the actual data gathering commenced with questionnaire distribution with the help of the contacted HR manager. A list of inclusion and exclusion criteria was first generated to ensure the respondents were qualified to answer the research instrument. The inclusion criteria were:

1. 19-59 years of age;
2. Currently working the night shift;
3. Have access to an internet connection;
4. Have a gadget; and,
5. Can read and type.

The following were the exclusion criteria:

1. Minor or senior citizen;
2. Working the day shift or midday shift;

3. Do not have access to an internet connection;
4. Do not have a gadget; and,
5. Have difficulties reading and typing.

After that, qualified individuals were given informed consent, included in the Qualtrics form. They were required to read and understand the form and then electronically sign it. Finally, after securing their consent, the questionnaire was shown to the respondents. Data collection ran from March 25, 2023 until May 25, 2023. As a token of appreciation to the respondents who were able to finish the questionnaire, five winners were chosen through a wheel of names. These individuals received prizes of Php 500, Php 400, Php 300, Php 200, and Php 100, respectively. Compensation was given as a cellphone load or through GCash, whichever method the chosen respondents preferred. They were contacted through the HR manager using their special code.

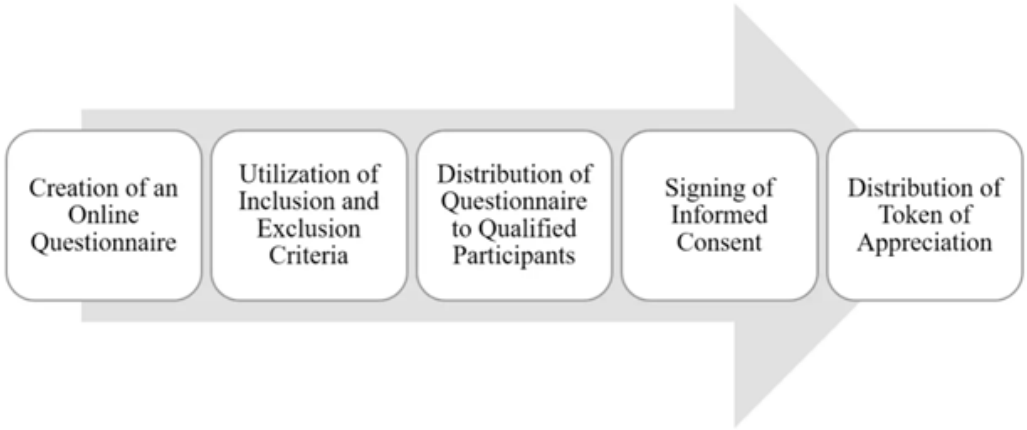

Figure 2.
Data Collection Procedure

2.5 Data Analysis

The sociodemographic profile of the respondents was tabulated through the use of frequency distribution and proportion. Specifically, each sociodemographic characteristic was grouped into categories for ease of reference. To measure the habitual beverage intake of the respondents, BEVQ-15 was administered, from which descriptive statistics such as mean, standard deviation, and median were determined. For this study, a conversion table was used to estimate the daily intake of respondents for each beverage. This was accomplished by multiplying the values from the "how often" and "how much each time" parts of the BEVQ-15. After that, the score obtained is multiplied by the conversion factor corresponding to its daily frequency value. This was done to ensure the uniformity of the respondents' habitual beverage intake scores. The conversion values are based on a study by Tan [19]. Values for conversion are presented in Table 1.

Furthermore, the sleep quality of the respondents was evaluated using the PSQI, which also provided the basis for calculating frequency distribution and proportion. In addition to that, cross-tabulations were developed to illustrate the data gathered fully. The respondents' typical beverage consumption was cross-tabulated with the sociodemographic variables and their sleep quality. This was accomplished using frequency distribution and proportion. All data were analyzed using IBM SPSS Statistics (Version 26).

Table 1. Conversion of weekly frequency beverage intake into daily frequency

FREQUENCY OF BEVERAGE CONSUMPTION	DAILY FREQUENCY OF BEVERAGE CONSUMPTION
Never or less than 1 time per week	0 time per day
1 time per week	0.1 time per day
2-3 times per week	0.4 times per day
4-6 times per week	0.7 times per day
1 time per day	1 time/day
2 times per day	2 times/day
3 times or more per day	3 times or more per day

2.6 Ethical Considerations

A questionnaire was used to gather information for this research. As a result, it was essential to maintain strict confidentiality and secure the data collected from respondents. The researcher ensured that all respondents had given their signed informed consent before showing the actual questionnaire. The goal of the research, as well as its potential benefits and risks, were included in the consent document, along with any other necessary information. This allowed the respondents to choose whether or not they would want to participate voluntarily. The respondents were not subjected to any kind of pressure or coercion. They were free to quit or withdraw from the research. In addition to securing informed consent, the principles of anonymity and confidentiality were upheld throughout this research. Respondents were given the choice, for the sake of maintaining their identity, to refer to themselves by codenames. Furthermore, instructions on how to create a unique code were given to the respondents to ensure anonymity. Finally, this study guaranteed that all the data and information obtained were only for research purposes.

3 Results

3.1 Sociodemographic Profile of the Respondents

Table 2 presents the sociodemographic profile of the respondents. Among the 247 night shift call center agents working in Mandaluyong City, almost half of the respondents are 19-29 years old (49.80%), and most are female (61.54%). Additionally, the majority of respondents are college graduates, making up 55.47% of the total. Out of the 247 participants, a great majority of individuals (55.47%) reported working for 8 hours per day, while many respondents (42.51%) mentioned working 9 hours daily. Notably, most participants (74.09%) have been employed in the industry for six years or less.

The findings of the study are similar to available data regarding sociodemographics. Amante [20] stated that the majority of Filipino call center agents are young women who have graduated from college with degrees in business, engineering, or social sciences. Moreover, it was mentioned that the average age of call center agents in the Philippines is 26 years old. She also discovered that the typical length of service for full-time employees in Philippine call centers is around 2 years and 9 months. BPO companies usually operate 24 hours a day, 7 days a week. In addition, an employee's work shift lasts 8-9 hours and often overlaps with others [21].

Table 2. Sociodemographic characteristics of selected night shift call center agents working in Mandaluyong city

SOCIODEMOGRAPHIC CHARACTERISTIC	FREQUENCY (%)
Age, years	
19-29	123 (49.80)
30-39	73 (29.55)
40-49	38 (15.38)
50-59	13 (5.26)
Gender	
Male	95 (38.46)
Female	152 (61.54)
Highest Educational Attainment	
High school graduate	15 (6.07)
College undergraduate	81 (32.79)
College graduate or higher	137 (55.47)
Vocational education	14 (5.67)
Number of Work Hours	
8 hours	137 (55.47)
9 hours	105 (42.51)
10 hours	5 (2.02)
Number of Years in the Industry	
< 1 year	15 (6.07)
1-3 years	78 (31.58)
4-6 years	90 (36.44)
7-9 years	43 (17.41)
>10 years	21 (8.50)

3.2 SSB and ACB Intake

Table 3 shows the summary statistics (mean, standard deviation, and median) of the respondents' estimated daily consumption of beverages indicated on the BEVQ-15 questionnaire. With 247 respondents, water was the most consumed drink daily among the selected night shift call center agents. This beverage has a mean total amount of 1,187.66 ± 553.37 mL. The result may originate from the fact that call center agents are typically given free drinking water as long as they bring their containers. Furthermore, the following most consumed drinks by the respondents were 100% fruit juice, regular soft drinks, sweetened juice beverage/drink, and whole milk. The mean total amount of the beverages mentioned was 485.53 ± 644.55 mL, 415.39 ± 521.85 mL, 415.11 ± 573.46 mL, and 393.91 ± 588.59 mL. These drinks are typically available in company cafeterias and fast food outlets, popular dining spots for many call center agents [14]. Sweetened juice beverage/drink and whole milk were the fourth and fifth most commonly consumed beverages. De Juras et al. [22] found that employed Filipino adults usually followed the cereal, milk, sugar, and oil patterns. Adherence to this dietary pattern was more common among those who consumed alcohol and engaged in minimal physical exercise.

Table 4 presents the total estimated daily consumption of SSB and ACB of the selected night shift call center agents. The respondents consumed an average of 2,154.94 ± 2,690.05 mL of SSBs daily. On the other hand, they were reported to consume an average of 2,931.44 ± 3,983.88 mL of ACBs daily. Moreover, the highest reported amount of SSBs consumed was 10,646.46 mL/day, compared to 15,969.69 mL/day for ACBs. The data highlights a significant variation in consumption levels among the respondents. Some night shift call center agents have an extremely high intake of these beverages, which could affect their health. The large standard deviations indicate a wide range of consumption patterns, suggesting diverse drinking habits within the group.

Table 5 shows the number of respondents with habitual SSB and ACB intake, factored by sociodemographic variables. It can be inferred that almost half of young adults aged 19-29 years (49.81%) habitually consumed SSBs and ACBs. Many female (37.87%) respondents habitually drank SSBs, while both males (23.67%) and females (23.67%) habitually drank ACBs. Moreover, most college graduates or higher (55.47%) habitually consumed both SSBs and ACBs. In addition, the majority of respondents who worked for 8 hours (55.47%) habitually drank SSBs and ACBs. Lastly, some workers who stayed in the industry for four to six years (23.16%) habitually consumed SSBs, while a few of the call center agents who were in the industry for seven to nine years (14.38%) habitually consumed ACBs.

3.3 Sleep Quality

Table 6 shows the number of respondents with habitual SSB and ACB intake, factored by sociodemographic variables. It can be inferred that almost half of young adults aged 19-29 years (49.81%) habitually consumed SSBs and ACBs. Many female (37.87%) respondents habitually drank SSBs, while both males (23.67%) and females (23.67%) habitually drank ACBs. Moreover, the majority of college graduates or higher (55.47%) habitually consumed both SSBs and ACBs. In addition, the majority of respondents who worked for 8 hours (55.47%) habitually drank SSBs and ACBs. Lastly, some workers who stayed in the industry for four to six years (23.16%) habitually consumed SSBs, while a few of the call center agents who were in the industry for seven to nine years (14.38%) habitually consumed ACBs.

Furthermore, most night shift call center agents used sleeping medication less than once a week (69.23%). Finally, the majority of respondents (56.68%) experienced mild difficulty with regard to daytime dysfunction. This suggests that they do not have much trouble staying awake and alert throughout the day's main waking periods. While some PSQI components expressed good sleep quality, sleep latency and the use of sleep medication indicate areas that might need attention. The combination of these factors underscores the complex nature of sleep patterns among night shift

Table 3. Respondents' estimated daily consumption of different types of beverages (mL)

BEVERAGE	MEAN (mL) ± SD	MEDIAN
Water	1187.66 ± 553.37	1419.53
100% Fruit Juice	485.53 ± 644.55	141.95
Soft Drinks, Regular	415.39 ± 521.85	165.61
Sweetened Juice Beverage/Drink	415.11 ± 573.46	141.95
Whole Milk	393.91 ± 588.59	94.64
Tea or Coffee, with cream and/or sugar	371.88 ± 496.52	141.95
Diet Soft Drinks/Artificially Sweetened Drinks	352.70 ± 521.39	141.95
Low Fat/Fat Free Milk	341.35 ± 534.35	23.66
Reduced Fat Milk (2%)	333.91 ± 551.21	23.66
Tea or Coffee, black with/without artificial sweetener (no cream or sugar)	327.92 ± 489.03	94.64
Energy & Sports Drinks	304.60 ± 506.04	35.49
Hard Liquor	298.27 ± 515.28	23.66
Sweetened Tea	295.26 ± 483.74	35.49
Beer, Ales, Wine Coolers, Non-alcoholic or Light Beer	292.10 ± 488.86	35.49
Wine	23.66 ± 273.32	489.07

Table 4. Respondents' total estimated daily consumption of SSBs and ACBs (mL)

	MEAN (mL) ± SD	MEDIAN [MIN, MAX]
Sugar-Sweetened Beverages (SSBs)	2154.94 ± 2690.05	828.06 [0, 10646.46]
Alcoholic and Caffeinated Beverages (ACBs)	2931.44 ± 3983.88	993.67 [0, 15969.69]

Table 5. Frequency of respondents with habitual SSB and ACB intake according to sociodemographic characteristics

SOCIODEMOGRAPHIC CHARACTERISTIC	SUGAR-SWEETENED BEVERAGES (SSBs)	ALCOHOLIC AND CAFFEINATED BEVERAGES (ACBs)
	Frequency (%)	Frequency (%)
Age, years		
19-29	61 (24.80)	62 (25.01)
30-39	22 (8.73)	51 (20.82)
40-49	6 (2.37)	32 (13.01)
50-59	12 (4.98)	1 (0.28)
Gender		
Male	37 (14.79)	58 (23.67)
Female	94 (37.87)	58 (23.67)
Highest Educational Attainment		
High school graduate	1 (0.35)	14 (5.70)
College undergraduate	27 (10.75)	54 (22.04)
College graduate or higher	61 (24.70)	76 (30.77)
Vocational education	1 (0.35)	13 (5.34)
Number of Work Hours		
8 hours	61 (24.70)	76 (30.77)
9 hours	45 (18.07)	60 (24.44)
10 hours	0 (0.00)	5 (2.02)
Number of Years in the Industry		
< 1 year	14 (5.70)	1 (0.37)
1-3 years	53 (21.61)	25 (9.97)
4-6 years	57 (23.16)	33 (13.28)
7-9 years	7 (3.03)	36 (14.38)
>10 years	2 (0.72)	19 (7.78)

Table 6. Sleep quality domains according to Pittsburgh Sleep Quality Index (PSQI)

PSQI COMPONENTS	FREQUENCY (%)
Subjective Sleep Quality	
Very good	68 (27.53)
Fairly good	142 (57.49)
Fairly bad	33 (13.36)
Very bad	4 (1.62)
Sleep Latency	
<15mins	45 (18.22)
15-30mins	73 (29.55)
30-60mins	93 (37.65)
>60mins	36 (14.57)
Sleep Duration	
<5hrs	64 (25.91)
5hrs-6hrs	73 (29.55)
6hrs-7hrs	7 (2.83)
>7hrs	103 (41.70)
Habitual Sleep Efficiency	
>85%	162 (65.59)
75% - 85%	29 (11.74)
65% - 74%	30 (12.15)
<65%	26 (10.53)
Sleep Disturbance Score	
0	2 (0.81)
1-9	171 (69.23)
10-18	69 (27.94)
19-27	5 (2.02)
Use of Sleeping Medication	
Not during the past month	30 (12.15)
Less than once a week	171 (69.23)
Once or twice a week	41 (16.60)
Three or more times a week	5 (2.02)
Daytime Dysfunction (Score)	
No difficulty (0)	75 (30.36)
Mild difficulty (1-2)	140 (56.68)
Moderate Difficulty (3-4)	25 (10.12)
Severe Difficulty (5-6)	7 (2.83)

workers and highlights the need for nutrition interventions to improve their overall sleep quality.

Figure 3 presents the sleep quality classification of the respondents based on their PSQI global score. A global score of less than five indicates that an individual has good sleep quality, while a global score of five to 21 indicates poor sleep quality. Out of 247 respondents, almost all (88.26%) are considered to have poor sleep quality during the past month of data collection. On the other hand, a few (11.74%) were supposed to have good sleep quality. This data suggests that most night shift call center agents experience inadequate sleep, which could be attributed to the nature of their work. Night shifts often disrupt the natural circadian rhythm, leading to difficulty achieving restful and quality sleep.

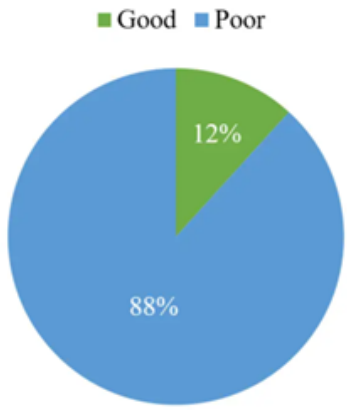

Figure 3.
Frequency Distribution of Respondents According to Sleep Quality

3.4 Effect of SSB and ACB Intake on the Sleep Quality of the Respondents

Table 7 presents the number of respondents with habitual SSB and ACB intake, factored by the seven PSQI components. It can be seen that the majority of the respondents who have fairly good sleep quality (57.71%) habitually consumed SSBs and ACBs. A few respondents with a sleep latency of 30 to 60 minutes (23.47%) habitually drank SSBs, while a few with a sleep latency of 15 to 30 minutes (20.82%) habitually drank ACBs. Surprisingly, some respondents who slept for more than seven hours (24.31%) habitually consumed SSBs, while a few who slept for five to six hours (20.83%) habitually consumed ACBs. Most night shift call center agents, with a habitual sleep efficiency greater than 85% (65.59%), habitually drank SSBs and ACBs. Also, a great majority of the respondents who have a sleep disturbance score of one to nine (69.23%) habitually consumed both SSBs and ACBs. In addition, a great majority of the BPO workers who use sleeping medication less than once a week (67.93%) habitually drank both SSBs and ACBs. Lastly, the majority of respondents with mild daytime dysfunction (56.68%) habitually consumed both SSBs and ACBs.

Table 8 shows the frequency of the respondents' SSB and ACB intake scores and their PSQI global scores, which are classified into two groups: those with poor and those with good sleep qualities. Most respondents with poor sleep quality consume more ACBs (61.13%) compared to SSBs (38.87%). On the other hand, most respondents with good sleep quality consume more SSBs (55.23%) compared to ACBs (44.77%).

4 Discussion and Conclusion

The study examined the SSB and ACB intake and sleep quality of selected night shift call center agents working in Mandaluyong City. This research utilized a cross-sectional design and collected data through an online questionnaire distributed to 247 qualified participants. The respondents'

Table 7. Frequency of respondents with habitual SSB and ACB intake according to sleep quality domains

PSQI COMPONENTS	SUGAR-SWEETENED BEVERAGES (SSBs)	ALCOHOLIC AND CAFFEINATED BEVERAGES (ACBs)
	Frequency (%)	Frequency (%)
Subjective Sleep Quality		
Very good	49 (19.95)	19 (7.58)
Fairly good	82 (33.05)	60 (24.66)
Fairly bad	4 (1.59)	29 (11.58)
Very bad	4 (1.59)	0 (0.00)
Sleep Latency		
<15mins	8 (3.32)	37 (14.90)
15-30mins	22 (8.73)	51 (20.82)
30-60mins	58 (23.47)	35 (14.18)
>60mins	31 (12.45)	5 (2.13)
Sleep Duration		
<5hrs	17 (6.71)	47 (19.20)
5hrs-6hrs	22 (8.73)	51 (20.83)
6hrs-7hrs	7 (2.83)	0 (0.00)
>7hrs	60 (24.31)	43 (17.39)
Habitual Sleep Efficiency		
>85%	106 (43.02)	56 (22.57)
75% - 85%	26 (10.36)	3 (1.24)
65% - 74%	4 (1.48)	26 (10.67)
<65%	3 (1.24)	23 (9.42)
Sleep Disturbance Score		
0	2 (0.81)	0 (0.00)
1-9	118 (47.93)	53 (21.30)
10-18	50 (20.13)	19 (7.81)
19-27	5 (2.02)	0 (0.00)
Use of Sleeping Medication		
Not during the past month	4 (1.48)	26 (11.97)
Less than once a week	53 (21.00)	118 (46.93)
Once or twice a week	7 (2.76)	34 (13.84)
Three or more times a week	0 (0.00)	5 (2.02)
Daytime Dysfunction (Score)		
No difficulty (0)	23 (9.22)	52 (21.15)
Mild difficulty (1-2)	61 (24.55)	79 (32.13)
Moderate Difficulty (3-4)	3 (1.02)	22 (9.10)
Severe Difficulty (5-6)	0 (0.00)	7 (2.83)

Table 8. Frequency of habitual SSB and ACB intake with sleep quality

	POOR SLEEP QUALITY	GOOD SLEEP QUALITY
	Frequency (%)	Frequency (%)
SSBs	85 (38.87)	16 (55.23)
ACBs	133 (61.13)	13 (44.77)

sociodemographic profile was recorded and evaluated using frequency distribution and proportion. Descriptive statistics, including mean, standard deviation, and median, were calculated from BEVQ-15 using SPSS to quantify respondents' habitual beverage consumption. The PSQI's frequency distribution and percentage showed the respondents' sleep quality. Finally, the respondents' typical beverage consumption was cross-tabulated with the sociodemographic variables and their sleep quality.

Results showed that the majority of the respondents are young female adults who are college graduates and work 8 hours per day for the BPO company. The most consumed drink by the respondents was water, with an average amount of 1,187.66 ± 553.37 mL/day. This is consistent with the findings of Loverio and Guevarra [14], which revealed that coffee and water are the most common complimentary beverages offered to call center agents. They habitually consumed fruit juices, soft drinks, sweetened juice, and whole milk. Soda and fruit juice are typically purchased to accompany call center agents' meals [14]. Camello [23] discovered that call center agents during graveyard shifts occasionally consider fruits, chips/crisps, or a glass of soda as a single snack.

Their average SSB intake was 2,154.94 ± 2,690.05 mL/day, while their average ACB intake was 2,931.44 ± 3,983.88 mL/day. The respondents' intake exceeded the recommendations for SSB and ACB. The American Heart Association suggested that the weekly intake of SSB does not exceed 36 ounces, which is about 1,065 mL [24]. Nawrot et al. [25] stated that the average healthy adult may consume up to 400 mg of caffeine daily, about the same as drinking four cups (945 mL) of coffee. In addition, moderate alcohol consumption often refers to up to one drink per day for women and up to two drinks per day for men [26]. Examples of one drink are 355 mL of beer, 148 mL of wine, and 44 mL of distilled spirits (80 proof).

Furthermore, approximately 80% of Filipino call center agents have reported that they have consumed alcoholic beverages at some point [27]. Amit et al. [28] found that call center agents usually drink alcohol after work. This is because internal factors that frequently contribute to alcohol intake include peer pressure and approval. Young female adults who are college graduates or higher, work eight hours daily, and have stayed in the industry for four to six years habitually consume SSBs. On the other hand, young adults who are college graduates or higher, work eight hours a day, and have stayed in the industry for seven to nine years habitually consume ACBs.

The majority of the respondents reported having fairly good subjective sleep quality but with high sleep latency and daytime dysfunction. Based on their PSQI global score, almost all respondents (88.26%) had poor sleep quality. Looking at the seven PSQI components, respondents who have fairly good subjective sleep quality, 30-60 minutes of sleep latency, more than seven hours of actual sleep, greater than 85% habitual sleep efficiency, one to nine sleep disturbance scores, use sleeping medication less than once a week, and have mild daytime dysfunction habitually consumed SSBs. On the other hand, respondents who also have fairly good subjective sleep quality, 15-30 minutes of sleep latency, five to six hours of actual sleep, greater than 85% habitual sleep efficiency, one to nine sleep disturbance scores, use sleeping medication less than once a week, and have mild daytime dysfunction habitually consumed ACBs. Kurata and Peralta [29] found that six out of ten recorded sick days and absences were attributed to lack of sleep, leading to chronic illness symptoms such as burnout syndrome, fatigue, insomnia, and disruptive biological rhythms. In addition, a great majority of employees (68.42%) who sleep during the daytime experience 20% call satisfaction inefficiency.

Furthermore, Ho et al. [30] looked at the typical health concerns connected to employment and the quality of sleep that incoming call center agents get. The majority of respondents cited stress from their jobs as the primary contributor to their health issues. Irritability, sleeplessness, tiredness, and disrupted sleep were also substantially associated with the prevalence of work-related health issues among the employees.

This research had respondents selected from a large company in Mandaluyong City. Rather than

using a purposive sampling approach, it would have been in the researcher's best interest to use a random sampling method to get a representative population sample. The research instrument had several shortcomings that restricted its applicability, which may have impacted the study's findings. Self-administered questionnaires are solely based on the respondents' intuition. Because of this, they may be unable to recall their typical consumption of beverages or their general sleep quality without making specific errors. Respondents could also make choices that favor the researcher or the study.

This study recommends that future researchers use a larger sample size and random sampling to yield statistically significant results. The data from the results of the study is highly skewed, possibly caused by measurement errors during data collection since the questionnaire is self-administered. For this reason, future studies must scrutinize and oversee the actual data collection procedure. In addition, there was an oversight in how the questionnaires were distributed. The researcher had no control over the actual data collection as it was handed out to the contact person, which is the HR Manager. The researcher must instruct the individual who will disseminate the research instrument to reduce data analysis errors.

Consumption of ACB was expected to be higher than that of SSB since five of the six SSB drinks are included in the alcoholic and caffeinated drinks based on the conceptual framework. This implies that future researchers should consider validating the distribution of the beverages because there is limited information from the BEVQ-15 with regard to this matter. Additionally, this study recommends incorporating a 24-hour food recall into the methodology, as this would accompany the results of the BEVQ-15. It will be done to reflect the respondents' SSB and ACB intake accurately.

Mediator and moderator variables could affect the respondents' habitual beverage intake and PSQI global scores. These factors include physical activity, sleep debt, stress, anxiety, depression, unexpected events and occasions in the company, and any health conditions that the respondents did not declare. These factors must be considered to obtain more statistically significant results. Tools such as the Global Physical Activity Questionnaire (GPAQ) for physical activity and the Depression, Anxiety, and Stress Scale (DASS) 21 can be utilized to determine the effect of such variables on the respondents. Glucose levels could also be explored in future research to ensure that there is a direct effect of SSB and ACB on sleep quality.

Statements and Declarations

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Data Availability

The data in this study are available upon request from the authors.

Ethical Considerations

The authors ensured that all respondents had given their signed informed consent before proceeding with the data collection. The goal of the research, as well as its potential benefits and risks, were included in the consent document, along with other necessary information. The principles of anonymity and confidentiality were upheld throughout this research. Respondents were given the choice, for the sake of maintaining their identity, to refer to themselves by code names. Instructions on how to create a special code were given to the respondents to assure anonymity. This study guaranteed that all the data and information obtained were only for research purposes.

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Competing Interest

The authors declare no conflicts of interest.

Author Contributions

J.P.V performed the data collection, analyzed the gathered data, and wrote the manuscript; **V.R.M.E.** assisted in constructing the overall concept of the study, oversaw the data collection and analysis, and proofread the manuscript; **A.C.C.** provided recommendations on the concept of the study, data collection, and data analysis, and contributed in proofreading the manuscript. All authors have read and agreed to the published version of the manuscript.

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