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Healthcare Delivery Situation in Naga City

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Abstract

Aim: In the Philippines, while significant progress has been made toward universal health coverage through initiatives like the UHC Act of 2019, persistent challenges in maternal and child health, family planning, and disease control—especially in underserved and urbanizing areas—continue to hinder the achievement of health-related SDGs. This research focused on assessing the healthcare delivery status, analyzing the gaps and determining factors affecting the attainment of targets in Naga City from 2018 to 2022.

Methodology: The study employed an explanatory sequential mixed-method design. Quantitative data was collected and analyzed first, followed by qualitative data. Using the descriptive quantitative process, the researcher assessed the healthcare delivery situation and its corresponding gaps in Naga City. Then, specifically, this study utilized qualitative focus group discussions (FGDs), enabling both breadth and depth of understanding of the whole research endeavor.

Results: Naga City's healthcare system faces significant challenges amid rising population density, including declining prenatal care, inconsistent family planning efforts, and substandard immunization coverage. Resource constraints, healthcare workforce shortages, and pandemic-related disruptions have further strained the city's ability to address maternal and child health, disease prevention, and growing urban health demands.

Conclusion: The healthcare delivery services in Naga City revealed notable trends and challenges across key areas. Thus, it is recommended that the develop RIM model is implemented in Naga City.

Keywords: challenges, gap analysis, health delivery, Philippines

INTRODUCTION

Healthcare systems worldwide are increasingly recognized as vital components in achieving sustainable development, particularly through the United Nations' Sustainable Development Goals (SDGs). Adopted in 2015, SDG 3 emphasizes universal health coverage, aiming to "ensure healthy lives and promote well-being for all at all ages" by 2030. This goal focuses on reducing maternal and child mortality, combating infectious diseases, and providing universal access to healthcare services, including family planning and immunization. While progress has been made globally, many countries continue to face significant challenges in achieving these targets, particularly in maternal and child health, reproductive health services, and the management of communicable diseases, especially in regions of Asia and Africa where high maternal and neonatal mortality rates persist.

In the Philippines, efforts to improve healthcare are also aligned with the SDGs, with a national emphasis on expanding universal health coverage, reducing maternal and child mortality, and addressing non-communicable and infectious diseases. The enactment of the Universal Health Care (UHC) Act of 2019 marks a significant step toward achieving these goals by ensuring equitable access to quality health services. Despite this legislative framework, substantial gaps remain in healthcare delivery. Challenges in family planning, maternal and child health services, and infectious disease control persist, particularly in rural and economically disadvantaged areas. Recent data from the Department of Health (DOH) reveals continued high maternal mortality rates and unmet needs for family planning, with these issues being particularly evident in urbanizing areas where healthcare resources are strained by population growth.

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The Bicol Region, which includes Naga City, faces similar healthcare challenges exacerbated by geographic and economic disparities. Access to healthcare is limited by infrastructure constraints, workforce shortages, and resource allocation issues. The region struggles with maternal and child health outcomes, including one of the highest teenage pregnancy rates in the country and a substantial need for improved family planning services. Additionally, managing infectious diseases and ensuring consistent immunization coverage remain significant concerns in Bicol, as the region works to align its health initiatives with SDG 3, aiming to reduce health disparities and enhance access to essential healthcare services.

Naga City, a key urban center in the Bicol Region, reflects both the successes and challenges seen at the regional and national levels. While the city has made progress in enhancing healthcare accessibility, rapid population growth has placed increasing pressure on its healthcare system. Critical issues such as maternal and child health, family planning, and immunization services persist, with high teenage pregnancy rates, maternal mortality, and underutilization of family planning methods remaining prevalent. Moreover, healthcare providers in Naga City face limitations in terms of capacity and resources, often resulting in gaps in preventive services and general healthcare, including dental care and disease control programs.

The purpose of this study is to guide primary healthcare team leaders, the City Health Office of Naga City, and the Local Government Unit (LGU) in addressing health-related issues and improving the implementation of health programs outlined by the DOH. This research serves as a basis for developing internal strategies to enhance the city's healthcare system. Additionally, the implementation of the Universal Health Care (UHC) Act in 2019, which mandates automatic enrollment of all Filipino citizens into PhilHealth, marks a significant milestone in healthcare reform. The infusion of funds through restructured sin taxes aims to bolster health insurance coverage and support local health systems and infrastructure. The UHC Act is a critical step toward addressing healthcare disparities, and it sets the stage for a broader "Health for All" campaign, which aligns with the state's policy to protect the right to health for all Filipinos.

Objectives

This study assessed the healthcare delivery status of Naga City and analyzed the factors affecting the target of healthcare delivery over the five-year period from 2018 to 2022.

Specifically, this study sought to answer the following questions:

1. What is the healthcare delivery status of Naga City?
2. What are the gaps identified on the healthcare delivery status in Naga City?
3. What other factors contribute to the attainment of the expected targets?
4. What Healthcare Delivery System Framework may be proposed based on the results of the study?

METHODS

Research Design

The study employed an explanatory sequential mixed-method design. The quantitative data was collected and analyzed first, followed by qualitative data. Using the descriptive quantitative process, the researcher assessed the healthcare delivery situation and its corresponding gaps in Naga City. Then, specifically, this study used qualitative focus group discussions (FGDs), enabling both breadth and depth of understanding of the whole research endeavor. For the quantitative research design, this study utilized the descriptive method by systematically collecting secondary data on Naga City's Healthcare service delivery via FHSIS as it sought outcomes that can be extrapolated to a larger population; it is definitive in its goals as it attempts to quantify the first and second problem of this study. To explain the results of the quantitative, this study also used the descriptive method via focused group discussion by gathering a small, diverse group of participants to engage in a moderated discussion about the hindrances and barriers they experienced and explore their professional opinions on the problems in healthcare service delivery in the city.

Population and Sampling

The study utilized secondary data from the City Health Office and the FHSIS reporting system, covering the health status of Naga City's 27 barangays from 2018 to 2022, with a total population of approximately 209,170. To assess healthcare gaps and contributing factors, the researcher conducted Focused Group Discussions (FGDs) with 10 key healthcare stakeholders, including administrators, nurses, midwives, and barangay health workers, ensuring

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data saturation was reached after 10 participants. The FGDs, guided by a researcher-made questionnaire, provided valuable insights into healthcare delivery challenges and informed the formulation of recommendations for improving the city's health services.

Instrument

The identification of the actual or current health status of the City covered the collection and collation of data based from the Field Health Service Information System (FHSIS) and other available sources. Due to the availability of data, the gap analysis in this study employed an alternative approach, rather than presenting raw data of the actual and projected target, the analysis utilized computed rates derived from reported actual values in relation to predefined target values. These computed rates were directly obtained by the DOH from existing datasets actual reported, providing a quantitative basis for assessing delivery of healthcare services. The gaps were subsequently calculated by determining the differences between the actual achievement rates and the 100% target, thereby quantifying the discrepancies between the current state of healthcare delivery and the desired outcomes. Then, factors contributing to the attainment of the expected targets were covered by the focused group discussion as a researcher-made guide questionnaire. It was imperative to identify first the health care delivery gaps of the city based on the FHSIS and reporting from CHO before conducting the FGD. The researcher-made questionnaire had undergone rigorous editing, analyzation before the actual conduct of the FGD.

Data Collection

After receiving approval for the research, the researcher began collecting secondary data from the City Health Office and the Local Government Unit (LGU) using the FHSIS, a reporting system by the Department of Health (DOH). The data covered all 27 barangays of Naga City from 2018 to 2022, with additional information retrieved from the LGU Score Card and city health records for unavailable data. The researcher also finalized a researcher-made questionnaire for the Focused Group Discussion (FGD), designed to explore the barriers faced by healthcare stakeholders, including program coordinators, nurses, midwives, and barangay health workers, in healthcare delivery. The FGD, moderated by the researcher, aimed to gather in-depth insights from participants through interactive discussions. A semi-structured questionnaire, adapted from the World Health Organization's Handbook for Monitoring the Building Blocks of Health Systems, guided the discussion. The face-to-face FGD allowed for active participation, and extensive notes were taken to capture key details and contextual information. This approach facilitated a comprehensive understanding of the challenges faced by healthcare providers in Naga City's health program implementation.

Data Analysis

This study employed a situational analysis framework to assess healthcare delivery in Naga City, utilizing secondary data from the Department of Health's (DOH) Field Health Service Information System (FHSIS) from 2018 to 2022. Unlike traditional gap analyses that measure performance against predefined targets, this approach focused on synthesizing service coverage rates and administrative data to map the operational landscape of healthcare in the city. The FHSIS data provided standardized indicators across different healthcare domains, allowing for a systematic evaluation of service patterns, resource allocation, and trends in population health. The analysis was conducted in three main phases: first, the secondary data synthesis, where FHSIS-reported rates were aggregated and analyzed using frequency counts, percentages, and rates to compute coverage for specific health programs. Trending was employed to visualize patterns in the data over the five-year period. Second, a thematic contextual analysis was conducted using data from focus group discussions (FGDs) with stakeholders in Naga City's health sector. The qualitative data from the FGDs were recorded, transcribed, and analyzed to identify major themes and interpret the findings within the context of the local healthcare system. Finally, the study conceptualized a proposed Healthcare Delivery System Framework, aiming to enhance healthcare delivery in Naga City based on the findings from both the quantitative data analysis and qualitative input. The study employed various data analysis techniques, including frequency, percentage, and ranking, to describe health indicators and track changes over the years. These methods helped to identify trends, gaps, and areas for improvement, ultimately guiding the development of a targeted framework for improving healthcare delivery in the city.

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Ethical Considerations

The study adhered to the Data Privacy Act of 2012 (Republic Act No. 10173), ensuring the confidentiality of personal, private, and health information. Informed consent was obtained from participants, with clear disclosure of the study's purpose and voluntary participation. The researcher prioritized privacy throughout the data collection, analysis, and presentation processes. Interviews and group discussions were audio-recorded in compliance with privacy laws, and all data were kept confidential to prevent harm to participants. Data gathered from the FGD were analyzed thematically, with responses translated into English and analyzed using a deductive approach to maintain professionalism and integrity.

RESULTS and DISCUSSION

This section presents and discuss the results, the analysis and interpretation of data gathered from the secondary sources using the Field Health Service Information System Annual Report from 2017 to 2020 and from the City Health Office records for 2021 and 2022. Further, this chapter also presents the data from the Primary source using a researcher made questionnaire dependently tailored on the gathered quantitative data from the FHSIS and other sources. The said data were presented in tabular and graphical form in accordance with the specific section and type of data posited on the statement of the problem.

1. Healthcare Delivery Status of Naga City

Naga City is a landlocked independent component city in the coastal province of Camarines Sur. The city has a land area of 77.40 square kilometers or 29.88 square miles which constitutes 1.40% of Camarines Sur's total area. Its population as determined by the 2023 Census was 215,727. While, in 2020, the Census was 209,170. This represented 10.11% of the total population of Camarines Sur province, or 3.44% of the overall population of the Bicol Region. Based on these figures, the population density is computed at 2,702 inhabitants per square kilometer or 7,000 inhabitants per square mile.

1.1 Maternal and Child Health Situation in Naga City for 5 years

The maternal and child health situation in Naga City from 2018 to 2022 shows both progress and ongoing challenges. Most infants were born within the healthy weight range, with the highest percentage of normal birth weights recorded in 2020 (96.51%) and the lowest low birth weight (LBW) cases (2.7%). However, LBW rates remained consistent between 15.86% and 17.89% in other years, indicating a need for continued maternal health interventions. The rate of vaginal births declined sharply from 98.69% in 2018 to 41.1% in 2021, suggesting a growing reliance on cesarean sections, potentially due to high-risk pregnancies or overuse of surgical interventions. Despite this, facility-based deliveries remained high, which is a positive indicator for maternal and neonatal health.

Child care services showed inconsistent coverage, with Vitamin A supplementation for infants aged 6–11 months peaking unusually high in 2021 (141.8%), but lower rates for children aged 12–59 months, highlighting a need for improved outreach to older children. The use of oral rehydration therapy with zinc remained critically low, suggesting gaps in care for diarrhea-related illnesses. The Maternal Care Program also faced challenges, with declines in prenatal visits, tetanus toxoid immunization, and iron-folic acid supplementation, particularly after the COVID-19 pandemic disrupted access to healthcare services.

While Naga City demonstrated strengths in facility-based deliveries, the long-term data reveals persistent gaps in maternal and child health services. The consistent presence of LBW cases, declining prenatal care, and underutilization of essential child health interventions point to the need for a more robust, accessible healthcare system. Strengthening community health programs, improving healthcare logistics, and enhancing health education efforts could help address these issues and improve outcomes for mothers and children in the city.

1.2 Teenage Pregnancy

Teenage pregnancy in Naga City from 2018 to 2022 revealed a total of 1,517 cases, with the majority (1,497) occurring among 15-19-year-olds. Although there was a general decline in teenage pregnancies over these years, the numbers remained consistently high, signaling the need for targeted interventions. A small number of pregnancies (20) occurred among adolescents aged 10-14, reflecting global trends where younger adolescents face higher health risks due to physiological and psychological immaturity.

In the 15-19 age group, the highest number of cases occurred in 2019 (371), followed by a slight decline each year. Despite this decrease, teenage pregnancies remained a significant concern, pointing to social and

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structural factors contributing to high rates. Teenage pregnancies pose serious health risks for both the young mother and her child, including complications like preterm birth, low birth weight, and neonatal health challenges. Pregnancies in younger adolescents (10-14 years) are particularly dangerous, with risks of prolonged labor, obstetric complications, and maternal mortality.

Contributing factors include limited access to contraceptive information, inadequate sexual health education, and barriers like stigma, financial constraints, and lack of transportation. Sexual violence and coercion also play a significant role, as many adolescents experience their first sexual encounters through coercion, increasing the risk of unintended pregnancies. Addressing these factors through comprehensive reproductive health education and sexual violence prevention programs is crucial to mitigating teenage pregnancy rates.

1.3 Contraceptive Prevalence Rate

Naga City's Contraceptive Prevalence Rate (CPR) showed significant fluctuations. The CPR slightly declined from 81.32% in 2018 to 80.46% in 2019, indicating a minor decrease in contraceptive use or program reach. However, in 2020 and 2021, the CPR sharply rose to 102.23% and 111.64%, respectively—values exceeding 100%, suggesting potential data reporting issues such as outdated population estimates or duplicated reporting. In 2022, the CPR dropped to 60.46%, the lowest in the five-year period, possibly reflecting disruptions in health services due to the COVID-19 pandemic or corrections to previous data anomalies.

The sharp increases in 2020 and 2021 raise concerns about data accuracy, highlighting the need for improved data management and monitoring systems. The decline in CPR in 2022 suggests potential issues with access to or availability of family planning services, possibly linked to pandemic-related disruptions. This decline could have long-term consequences for reproductive health, such as increased unplanned pregnancies and greater pressure on healthcare resources.

Despite data inconsistencies, the number of individuals served continued to rise, indicating a growing demand for contraceptive services. To address these challenges, there is a need for stronger reproductive health programs, better data collection, and improved monitoring systems to ensure accurate reporting and effective interventions. Reliable data is essential for evidence-based planning, targeting underserved populations, and enhancing the overall impact of family planning initiatives.

1.4 Family Planning and Reproductive Health Situation along with Family Planning Methods in Naga City for 5 years

The utilization of various family planning methods (FPMs) in Naga City from 2018 to 2022. It highlights trends, ranks the methods based on average usage, and provides insights into reproductive health behavior. The findings underscore preferences for certain methods while also revealing gaps in adoption, potentially influenced by cultural, educational, and systemic factors. The most utilized method, with an average of 10,091 users annually. Usage peaked in 2021 with 12,192 users, highlighting its popularity due to convenience, affordability, and widespread availability. Averaging 4,254 users annually, condoms ranked second. Usage saw fluctuations, with a notable increase in 2022 (5,888 users), likely reflecting enhanced awareness campaigns or improved access. With an average of 2,170 users, female sterilization remains a popular permanent method. Its consistent use reflects trust in its efficacy among women seeking long-term solutions.

The Lactational Amenorrhea Method (LAM) recorded an upward trend, with its highest usage (3,140) in 2022. Its popularity could be tied to its natural and cost-free characteristics, making it appealing to breastfeeding mothers. The Standard Days Method (SDM) had an average of 1,250 users annually, demonstrating moderate acceptance of natural family planning.

Averaging only 58 users annually, male sterilization remains the least preferred permanent method, likely due to societal norms and misconceptions about masculinity. Methods like Cervical Mucus (NFP-CM), Basal Body Temperature (NFP-BBT), and Symptothermal (NFP-STM) methods had minimal users, with averages below 60 annually. This suggests limited awareness or challenges in method adherence.

The dominance of female-centric methods, such as pills and sterilization, indicates the disproportionate burden placed on women for contraceptive responsibility. The low uptake of male sterilization highlights enduring gender norms that discourage male participation in family planning (Stenanovic-Fenn et al., 2019).

1.5 Immunization Services

Immunization services in Naga City from 2018 to 2022 show significant trends, with notable improvements in coverage from 2018 to 2019, reflecting effective healthcare interventions. However, the COVID-19 pandemic in

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2020 caused a sharp decline in vaccination rates, particularly for vaccines like BCG and Hepatitis B, which fell to their lowest in 2021. Although there were slight recoveries in 2022, coverage remained below pre-pandemic levels, indicating persistent barriers to access or delivery.

The Pentavalent and Oral Polio Vaccine series showed strong coverage in 2019 but gradually declined in the following years. The Fully Immunized Children (FIC) rate dropped from 67.24% in 2018 to 57.11% in 2022, pointing to incomplete immunizations. Measles-containing vaccines showed a similar trend, though MCV2 demonstrated a positive increase, suggesting better follow-up for second doses. The introduction of IPV2 in 2022 indicated a delayed rollout or improved reporting.

Catch-up campaigns and the number of children receiving basic vaccines saw a spike in 2019 but were not sustained. Overall, while immunization coverage peaked in 2019, the pandemic disrupted progress, and despite slight recovery in 2022, most rates have not returned to pre-pandemic levels. This highlights the need for strengthened immunization programs, catch-up campaigns, and enhanced community engagement to restore and improve vaccine coverage post-pandemic.

1.6 Health Care Providers and System Capacity of Naga City in 2018-2022

The healthcare system in Naga City struggles to meet the growing population's needs due to inconsistent increases in healthcare personnel. Although the population rose from 203,647 in 2018 to 210,404 in 2022, the number of healthcare providers did not grow proportionately, leading to critical shortages, particularly in doctors and sanitary engineers. The number of doctors remained critically low, ranging from just 3 to 6 over the five-year period—far below the WHO-recommended ratio of 1 doctor per 1,000 people. This shortage likely limits access to care, prolongs waiting times, and impacts health outcomes. Nurses increased from 5 in 2018 to 19 in 2022, showing progress but still insufficient to meet healthcare demands, especially during emergencies. Midwives fluctuated, peaking at 39 in 2020 but dropping to 35 in 2022, risking reduced access to maternal and child health services.

Availability of other healthcare professionals was inconsistent. Nutritionists dropped to only one in 2022, and sanitary engineers were completely absent from 2018 to 2022. The lack of sanitary engineers raises concerns about sanitation and public health risks, especially in the face of disease outbreaks or disasters. Overall, the mismatch between healthcare workforce growth and population increase, coupled with persistent shortages in key roles, threatens the quality, accessibility, and sustainability of health services in Naga City.

1.7 Disease Prevention and Control Program Situation along with Tuberculosis in Naga City for 5 years

The TB case notification rate in Naga City showed a decline from 458.64 per 100,000 population in 2018 to 112.59 in 2021, likely due to the disruptions caused by the COVID-19 pandemic, including limited access to healthcare, lockdown measures, and the reallocation of resources. This drop indicates reduced TB detection and treatment during the pandemic. However, in 2022, the notification rate surged to 1,290.37 per 100,000 population, suggesting a rebound as COVID-19 restrictions lifted and TB detection efforts resumed. The sharp increase likely reflects both the identification of missed cases from previous years and intensified case-finding initiatives.

This rebound highlights the long-term impact of the pandemic on TB control and the need for continued efforts to identify both active and latent TB cases, particularly in high-risk groups. It also underscores the importance of building resilient healthcare systems capable of maintaining essential services during public health emergencies to prevent setbacks in disease control.

1.8 Health Risk and Population Assessment along with Environmental Health Situation in Naga City for 5 years

Naga City saw significant improvements in household access to improved water supply and sanitation facilities. Access to water supply was nearly universal, rising from 93.24% in 2019 to 99.57% in 2022, with most households relying on safe Level 3 connections (household connections). However, a small percentage of households continued to use less safe water sources (Level 1 and Level 2), which pose health risks due to potential contamination, especially in lower-income or rural areas. Barriers like infrastructure limitations and geographic factors hinder full access to safer water sources, suggesting a need for infrastructure expansion and subsidies for low-income households.

Sanitation access improved dramatically from 30.95% in 2018 to 99.63% by 2020, reflecting successful public health interventions and education campaigns. The earlier low rates in 2018 and 2019 likely stemmed from resource constraints or challenges in promoting behavior change. These trends highlight the importance of

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infrastructure investments and community education in achieving high sanitation coverage and reducing the risk of waterborne diseases.

1.9 Morbidity Causes

From 2018 to 2022, the community's morbidity profile highlights a dual burden of non-communicable and infectious diseases. Hypertension was the leading cause, with 2,672 cases, reflecting the rise in lifestyle-related chronic illnesses. Upper respiratory tract infections (URTIs) ranked second with 1,382 cases, showing the impact of communicable diseases, particularly in crowded or poorly ventilated areas. Other major health issues included animal bites (1,038 cases), tuberculosis (950 cases), and cough and colds (886 cases).

Infectious diseases like tuberculosis and dengue, along with chronic conditions like diabetes, remained persistent concerns. Tuberculosis highlighted the vulnerabilities linked to poverty, overcrowding, and limited healthcare access, while dengue, with 434 cases, pointed to environmental and seasonal risks. The high incidence of animal bites emphasized the need for pet vaccination and rabies prevention. Respiratory illnesses made up a large portion of the morbidity, exacerbated by poor air quality and climate variability.

The data underscores the need for a comprehensive public health approach that addresses both communicable and non-communicable diseases, including better healthcare infrastructure, disease prevention, and health promotion. Strengthening surveillance, increasing awareness, and promoting healthy lifestyles are essential for reducing the disease burden and improving overall health outcomes.

1.10 Health Risk and Population Assessment in terms of Mortality Cases in Naga City for 5 years

The five-year mortality data from Naga City (2018-2022) highlights significant health risks, particularly for vulnerable populations such as mothers and infants. Maternal mortality showed fluctuating trends, with a decline from 2018 to 2019, but sharp increases in 2020 and 2021, likely due to disruptions caused by the COVID-19 pandemic. Infant mortality rose dramatically from 58 deaths in 2018 to 611 in 2022, indicating systemic issues in neonatal care, maternal health, and immunization. Perinatal mortality also surged, from 50 deaths in 2018 to 415 in 2022, pointing to deficiencies in prenatal care and emergency obstetric services.

Overall mortality in Naga City increased significantly over the five years, with cardiovascular diseases such as acute myocardial infarction and hypertension as leading causes of death. Other notable causes included poor oral intake, pneumonia, and Type II diabetes mellitus, reflecting gaps in nutrition, disease prevention, and chronic disease management. These data highlight a dual burden of both infectious and non-communicable diseases. Addressing these challenges requires strengthening maternal and child health services, expanding primary care access, and implementing targeted interventions such as the Philippine Package of Essential NCD Interventions (PhilPEN). A coordinated approach involving disease-specific task forces, health education, and improved healthcare delivery systems is essential to reversing rising mortality trends and improving health outcomes in Naga City.

1.11 Dental Services

Dental care services for children aged 12–71 months in Naga City have shown fluctuating coverage and significant gaps, highlighting the need for stronger interventions. The percentage of orally fit children improved slightly from 0.71% in 2018 to 14.11% in 2021, but dropped to 9.11% in 2022, suggesting ongoing oral health issues. Dental caries and other oral problems are prevalent, potentially due to poor oral hygiene, limited access to preventive care, and inadequate parental education.

The proportion of children receiving Basic Oral Health Care (BOHC) services varied, with the lowest coverage in 2019 (9.93%) and the highest in 2022 (45.96%), but still leaving a significant gap of 54.04%. This indicates improvements in service delivery but highlights that many children remain without necessary care due to factors like a shortage of dental professionals and lack of awareness among parents. The eligible population of children increased slightly, yet the percentage receiving services remained disproportionately low. Addressing these gaps requires scaling up dental programs in underserved areas, improving access, and raising awareness about the importance of early oral health care.

2. Gaps on the Healthcare Delivery Status of Naga City From 2018 to 2022

This section presents a comprehensive analysis of the identified gaps derived from secondary data collected from the Family Health Survey Information System (FHSIS) and official records from the City Health Office. Utilizing

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the rates provided, the researcher systematically examines the gaps across various variables, aligning them with the specific objectives of this study. This approach ensures a structured and methodical presentation of the findings, facilitating a thorough understanding of the existing challenges in healthcare delivery in Naga City from 2018 to 2022.

2.1 Gap on the Live Births Delivered by HCP

Naga City demonstrated generally good access to skilled healthcare professionals during childbirth, with minimal gaps in deliveries attended by healthcare providers (ranging from 1% to 2%). However, a significant exception occurred in 2020, when the gap increased to 5.26%, due to a sharp decline in doctor-attended births and a rise in midwife-attended deliveries. This shift was primarily caused by disruptions from the COVID-19 pandemic, which limited access to hospitals and led to more reliance on midwives or home births. While midwives are vital for maternal care, especially in rural areas, the World Health Organization (WHO) emphasizes that high-risk pregnancies require medical doctors and hospital-based facilities for safe delivery outcomes.

In 2021 and 2022, doctor-attended births increased, reflecting a recovery in hospital-based services, but midwife-attended deliveries declined, suggesting a shift back to hospital-centered childbirth. The fluctuations in skilled birth attendance are influenced by factors like healthcare system strain during crises, limited access to hospitals in underserved areas, and cultural preferences for midwifery or home births. The unequal distribution of healthcare professionals also contributes to disparities in access to skilled care. Strengthening the integration of midwifery services, enhancing training, and providing financial and logistical support for pregnant women are essential to ensure consistent access to skilled care, reduce maternal and neonatal risks, and improve health outcomes for all populations.

2.2 Birth Weight Gap

Birth weight is a critical indicator of newborn health and survival, influencing both immediate neonatal outcomes and long-term development. The data on live births with weights ≥2,500 g from 2018 to 2022 reveals systemic gaps between observed rates and the 100% target set by the Field Health Services Information System (FHSIS). Rates fluctuated between 15.86% (2018) and 17.90% (2021), with a stark decline to 3.49% in 2020, reflecting pandemic-related disruptions. A low birth weight (LBW) rate exceeding 15% is concerning, as it is linked to higher risks of neonatal morbidity, developmental delays, and long-term health complications (WHO, 2021). The years 2018, 2019, 2021, and 2022 consistently showed gaps above 15%, suggesting persistent challenges in maternal health, prenatal care, and nutrition. The sharp drop in LBW cases in 2020 (only 3.49%) is an anomaly and may be attributed to data inconsistencies, changes in healthcare access, or temporary improvements in maternal nutrition and prenatal care interventions.

Low birth weight is strongly associated with maternal factors such as poor nutrition, inadequate prenatal care, infections, and maternal stress (Desta, 2019). Studies indicate that malnutrition during pregnancy—including iron, folic acid, and protein deficiencies—significantly contributes to intrauterine growth restriction (IUGR), leading to LBW (Jain et al., 2022). Additionally, maternal illnesses such as gestational hypertension, infections, and diabetes can compromise placental function, affecting fetal growth (Black et al., 2022). The higher gaps in 2018, 2019, 2021, and 2022 may indicate insufficient prenatal nutritional support, inconsistent maternal supplementation programs, or barriers to healthcare access.

2.3 Gap of the Deliveries in a Health Facility in Naga City for 5 years

The gap on types of deliveries in Naga City from 2018 to 2022 reflects significant variations in normal vaginal deliveries, health facility births, and overall delivery trends. These fluctuations indicate potential challenges in access to maternal healthcare services, healthcare-seeking behaviors, and systemic disruptions, particularly during the COVID-19 pandemic. While the high percentage of facility-based deliveries suggests effective implementation of institutional birth policies, the declining rate of normal vaginal deliveries in some years raises concerns about obstetric complications, increasing cesarean section rates, and healthcare system strain.

The gap in health facility births remained minimal, ranging from 1.6% to 5.32%, suggesting strong institutional support and compliance with safe birthing protocols. However, the slight increase in the facility birth gap in 2020 (5.32%) may reflect the impact of pandemic-related access barriers, such as transportation difficulties, overwhelmed hospitals, and financial constraints. Studies have shown that during the height of the COVID-19 crisis, many pregnant women faced challenges in reaching hospitals due to lockdowns, reduced public transportation, and fear of infection (UNFPA, 2021). These factors likely contributed to the temporary decline in facility births, potentially

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increasing the risk of home deliveries without skilled birth attendants, leading to higher maternal and neonatal complications.

2.4 Gap on Child Care Services/Intervention Delivery

Child health services in Naga City from 2018 to 2022 revealed critical gaps in key interventions such as Vitamin A supplementation, management of childhood illnesses, and provision of oral rehydration therapy (ORT) with zinc. While Vitamin A coverage among infants aged 6–11 months showed some progress—peaking at over 90% in 2019—it dropped significantly in 2020, and unusually high figures in 2021 and 2022 raised concerns about data accuracy. For children aged 12–59 months, Vitamin A coverage remained consistently low, with less than 60% reached even in the best-performing year, indicating persistent service delivery and outreach issues.

The administration of Vitamin A to sick children was also inconsistent, with fluctuating coverage and gaps of up to 44.11%, suggesting poor integration into standard treatment protocols. Diarrhea management, a crucial component of child survival strategies, showed even more alarming trends. ORS coverage varied dramatically, dropping from nearly 97% in 2018 to under 20% in 2019, while zinc supplementation never exceeded 35% during the entire period. In some years, zinc coverage gaps reached as high as 100%, pointing to systemic challenges in supply chains, health education, and program monitoring.

These persistent gaps in essential health services expose children in Naga City to higher risks of illness, malnutrition, and preventable death. The data highlights the urgent need for improved healthcare system integration, accurate monitoring, consistent supply availability, and stronger community engagement to ensure the well-being of young children.

2.5 Gap on Maternal and Child Health Delivery System along with Maternal Care Prenatal Program in Naga City for 5 years

Prenatal care is essential for ensuring the health of both mothers and infants, but a five-year analysis of maternal healthcare services in Naga City reveals significant gaps. Coverage of key interventions, such as prenatal visits, tetanus toxoid vaccination, and iron with folic acid supplementation, has steadily declined. The percentage of pregnant women receiving at least four prenatal visits dropped from 42.92% in 2018 to just 15.13% in 2022, reflecting challenges in access to maternal healthcare, likely exacerbated by the COVID-19 pandemic. Similarly, tetanus toxoid vaccination coverage fell from 21.22% in 2018 to 17.46% in 2022, leaving a large gap in preventing neonatal tetanus. The coverage for TT2 plus vaccinations also decreased, further compromising maternal and infant health. Additionally, the administration of iron and folic acid supplementation, critical for preventing anemia and birth complications, dropped drastically from 58.69% to 27.07% over the same period. These declines suggest logistical issues, limited healthcare access, and a lack of consistent healthcare engagement, highlighting the urgent need for improved prenatal care services in the city to reduce maternal and infant health risks.

2.6 Contraceptive Prevalence Rate (CPR) in Naga City from 2018 to 2022

The Contraceptive Prevalence Rate (CPR) in Naga City from 2018 to 2022 reveals significant fluctuations in family planning method utilization, indicating variability in both contraceptive uptake and program implementation. The CPR peaked at 111.64% in 2021 and dropped to a low of 60.46% in 2022, with 2020 and 2021 surpassing the 100% target. This increase could reflect successful family planning campaigns, improved service delivery, or greater community awareness. The higher CPR in these years also aligns with a reduction in Naga City's average growth rate, suggesting effective population control. However, the sharp decline in 2022, with a 39.54% service gap, highlights challenges in maintaining access to family planning services, possibly due to disruptions from the COVID-19 pandemic or resource limitations. This decline points to potential negative effects on reproductive health and population management in the city.

2.7 Immunization Services Gap

The immunization data for Naga City (2018–2022) reveals significant gaps in vaccination coverage for various childhood diseases, despite the availability of services. Oral Polio Vaccine (OPV) had the highest coverage, with gap rates around 29–30%, while the Hepatitis B vaccine had the largest gap at 50.94%. Coverage for Penta vaccines was also below herd immunity thresholds, with gaps from 20–37.9%.

The Fully Immunized Child (FIC) gap (32–42%) and Completely Immunized Child (CIC) gap (81–92%) highlight poor completion rates, particularly after the first year of life. Child Protected at Birth (CPAB) gaps (47–86%) signal inadequate maternal tetanus immunization, critical for neonatal protection. An average 40% gap across

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services suggests service delivery challenges, likely due to healthcare workforce shortages and high population-to-provider ratios. Recommendations include increasing healthcare personnel, integrating maternal vaccination into prenatal care, using community-based outreach, and improving caregiver education through culturally relevant communication.

Targeted strategies, including home visits, digital tracking, and community engagement, are essential to boost vaccine uptake. Strengthening these areas could help Naga City reduce preventable diseases and achieve higher immunization coverage for children.

2.8 Health Care Providers and System Capacity Gap

aga City faced significant gaps in its healthcare provider-to-population ratios, falling short of the ideal standards set by the Universal Health Care (UHC) Law and the National Economic and Development Authority (NEDA). While the city met the nurse ratio (99%) and midwife ratio (79%), there were shortages in several key areas, including doctors, dentists, nurses, midwives, nutritionists, medical technologists, and sanitary engineers. The most notable shortage was among Barangay Health Workers (BHWs), with a gap of 2,082, signaling a strain on the healthcare system. These shortages lead to increased workloads for existing healthcare professionals, risking burnout and delayed care, and hinder efforts in preventive health and environmental health measures. The absence of essential roles, like nutritionists and medical technologists, also affects health promotion and disease management.

To address these gaps, Naga City needs to prioritize hiring healthcare professionals, expand BHW roles, increase the health budget to offer financial incentives, and implement scholarship programs for students committing to work in the city. Strengthening BHW training and enhancing community health programs can help mitigate the immediate shortage and improve overall health outcomes. Strategic workforce planning, budget adjustments, and community health initiatives are essential to meeting UHC Law standards and ensuring accessible healthcare. By aligning with national standards and implementing these recommendations, Naga City can improve its healthcare system and meet the needs of its growing population.

2.8 Gap on Health Risk and Population Assessment along with Environmental Health Situation in Naga City for 5 years

Naga City made significant strides in improving environmental health, particularly in water access, sanitation, and food establishment compliance. However, gaps persist in critical areas such as access to improved water supply, sanitation infrastructure, and food safety compliance. The most notable gap was in household access to an improved water supply, particularly in 2019, when rapid population growth outpaced infrastructure expansion, causing a temporary decline. By 2022, this gap had narrowed significantly. Sanitation infrastructure also saw substantial improvement, reaching near-universal coverage by 2020, though a small gap remained. In contrast, food establishment compliance with sanitary permits remained high at 100%, but the number of permitted establishments drastically decreased from 1,481 in 2018 to 50 in 2022, possibly due to stricter enforcement or the impact of the COVID-19 pandemic. These findings highlight the need for continued investment in infrastructure, targeted health interventions, and policies that balance regulatory enforcement with economic support for businesses, ensuring long-term public health improvements in Naga City.

2.9 Gap on Dental Care Services

Access to dental care in Naga City has made progress over the past five years, but significant gaps remain, particularly concerning the percentage of orally fit children and the provision of basic oral healthcare (BOHC). In 2018, only 0.71% of children aged 12-71 months were considered orally fit, with dental issues such as cavities and gum disease being prevalent. While the percentage improved to 14.11% in 2021, it dropped to 9.11% in 2022, meaning over 85% of children continued to suffer from dental problems. This aligns with national trends, where most Filipino children experience dental caries, and untreated issues can lead to long-term health problems such as malnutrition and poor academic performance.

Another major gap is the provision of BOHC, including preventive treatments like fluoride applications and oral health education. In 2019, only 9.93% of children received BOHC, marking the lowest coverage. However, by 2022, coverage increased to 45.96%, likely due to post-pandemic recovery efforts like school-based dental programs. Despite this improvement, more than half of eligible children—54.04%—still lacked access to essential dental care, exposing them to continued oral health risks.

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3. Factors Contributing to the Attainment of the Expected Targets In the Implementation of the Health Programs in Naga City

The implementation of health programs in Naga City has faced a range of challenges that impact the attainment of expected targets, as revealed through a thematic analysis of focus group discussions. One of the primary issues identified was the disruption caused by the COVID-19 pandemic, which exposed systemic weaknesses and severely interrupted healthcare service delivery, particularly in areas like vaccination and maternal care. This period highlighted the need for adaptable and resilient strategies, such as the inclusion of contingency plans within health program frameworks to ensure continuity of services during emergencies. Despite these setbacks, the resilience of Naga City's health system was evident, with gradual recovery efforts ongoing.

Accessibility to healthcare services also remains uneven, particularly for low-income families and residents of upland barangays. Although infrastructure such as roads is in place, barriers persist due to limited service hours, funding shortages, and staff instability. Barangay Health Stations operate within restricted hours, and the lack of permanent employment for many healthcare workers—such as nurses under the Department of Health's Nurse Deployment Project and Barangay Health Workers—hampers continuity and quality of care. This instability leads to frequent staff turnover, affecting the relationship between providers and communities, disrupting record-keeping, and requiring repeated training of new staff. The focus group participants emphasized the importance of regularizing these positions and improving incentives to attract and retain experienced personnel, thereby enhancing service delivery and healthcare outcomes.

Furthermore, the city's healthcare programs are constrained by persistent shortages in funding, human resources, and essential materials. Workforce gaps, especially among program coordinators and midwives, were flagged as major bottlenecks. The inadequate number of coordinators affects the management and monitoring of various health initiatives, likened by participants to a faucet with weak water pressure—services do not reach communities effectively. Compounding this issue is the inconsistent involvement of communities across barangays, with some being more supportive and engaged than others. Strengthening community participation and enhancing local health governance are necessary to improve program reach and effectiveness.

Despite recent improvements in health infrastructure—such as the establishment of the Naga City Super Health Center and City Health Office 2—resource scarcity and governance inefficiencies remain significant hurdles. Participants pointed out that these facilities are often underutilized due to a lack of equipment and trained personnel. Budget constraints, inefficient resource allocation, and limited involvement of healthcare professionals in planning and budgeting sessions further undermine program success. For example, Barangay Health Workers, rather than midwives or nurses, often represent health interests during budget discussions, leading to misaligned resource distribution. Addressing these issues requires transparent financial planning, stakeholder involvement, and better coordination between national and local health agencies to prevent inefficiencies such as the delivery of near-expiry medicines.

Ultimately, the focus group discussions highlighted that while infrastructure and programs exist, the systemic issues of underfunding, temporary staffing, lack of job security, and weak governance significantly limit healthcare delivery in Naga City. Drawing from best practices in other cities like Taguig and Baguio, which employ proactive monitoring and child health cards, could provide models for improvement. To move forward, Naga City needs an integrated and strategic approach that prioritizes investment in human resources, strengthens local governance, and ensures community engagement to achieve sustainable and effective healthcare delivery.

4. Recommendations for Healthcare Service Delivery System in Naga City

With the application of the H-E-A-L-T-H GAPS Framework, the researcher developed a model to propose practical solutions addressing the identified gaps in healthcare delivery. Recognizing that the healthcare service delivery system in Naga City is confronted with multifaceted challenges—such as resource limitations, workforce instability, and governance inefficiencies—that hinder effective service provision and resource allocation, the study utilized focused group discussions to derive actionable recommendations. These recommendations provide a structured framework for addressing these systemic issues. Furthermore, the analysis critically evaluates each proposed intervention within the context of the identified challenges, emphasizing their potential to enhance healthcare outcomes and operational efficiency.

The Recommendation Integration Model (RIM) is a strategic framework designed to enhance the healthcare service delivery system in Naga City, addressing key gaps identified in the study. Rooted in the World Health

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Organization's (WHO) building blocks for health system strengthening, the model emphasizes leadership and governance, health workforce expansion, access to services and products, and digitalization as core pillars. It aims to enforce efficient health services while reducing disparities in healthcare accessibility. By integrating targeted interventions such as telehealth services, continuous monitoring, and economic strategies, the RIM Model fosters a more sustainable and equitable healthcare system.

Conclusions

The healthcare situation in Naga City revealed notable trends and challenges across key areas. Population growth remained uneven, with some barangays experiencing significant surges, putting pressure on urban planning and healthcare resources. Maternal and child health services showed declining coverage in prenatal care and persistent issues with teenage pregnancy and low birth weights. Family planning efforts fluctuated, with inconsistent contraceptive prevalence rates and a continued burden placed on women for contraceptive responsibility. Immunization programs faced significant service gaps, failing to meet global standards for coverage, while shortages of healthcare providers hindered service delivery. The pandemic disrupted disease prevention programs, particularly tuberculosis detection, highlighting systemic vulnerabilities.

Recommendations

To enhance the healthcare system in Naga City, several strategic recommendations are proposed. First, decentralizing healthcare through community health centers equipped with telehealth services can expand access and reduce the strain on central facilities (WHO, 2021). Addressing economic and logistical challenges by increasing healthcare funding and improving supply chain management—through partnerships with local suppliers and advanced inventory systems—will ensure consistent availability of medical supplies (Catan et al., 2023). Financial assistance programs, including subsidized insurance, transport vouchers, and direct aid, can help underserved communities overcome barriers to care (OECD, 2021). Public health awareness campaigns using culturally sensitive messaging and community engagement are essential for tackling misconceptions about preventive care and family planning (WHO, 2022). Strengthening the healthcare workforce through competitive incentives, scholarship programs, and continuous training will help recruit and retain skilled professionals in the city (UNICEF, 2021). Finally, empowering community health workers and involving local officials can enhance outreach, education, and service delivery at the grassroots level (WHO, 2021). Collectively, these measures aim to build a resilient, equitable, and pandemic-ready healthcare system in Naga City.

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