

A Document Analysis for Improving Oral Health Services in Niue

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ABSTRACT

Background: There is very little research that focuses on oral health in the Pacific region. This paper outlines a document analysis of dental reports from the dental clinic in Niue and to examine their oral health and dental services. Furthermore this paper is intended to highlight how oral services in Niue can be improved for better oral health care for the Niue community. **Methods:** A document analysis of seven Niue dental reports between July 2011 to July 2018. The information found in the documents were organised under the sections clinical data reporting. The analysis also focused on a strength based approach for discussing the key challenges; the main achievements; and future recommendations for improving dental services for Niue. **Results:** Dental caries are the most common reason for tooth extractions followed by periodontal diseases. Primary school students are affected the most with 60 percent of students experiencing untreated dental caries. Among high school students, the rate of dental caries experienced is relatively low. Women appear to attend the dental clinic more than men however the number of visits for both men and women has declined. The key challenges faced by the dental team were a lack of resources specifically shortage of computers and functioning dental chairs, unfamiliarity with MEDTECH and limited staff development opportunities. Despite these challenges, the team were still able to establish the 'Atuhau Mamali' programme and upskill one staff member through professional development. Other achievements included reducing noise pollution, allocating a budget for safety equipment and establishing clinical guidelines for practice. **Conclusions:** Recommendations to improve oral health and dental services in Niue are to deliver targeted dental caries interventions in schools, introduce stronger food policies and to implement collaborative networks across the Pacific region. It is recommended that the Niue dental team develop more rigorous methods of data documentation to gain a more accurate picture of oral health in the country.

Keywords: 'Oral health', 'Dental clinics', 'Public health', 'Niue', 'Oral health in the Pacific', 'Pacific island countries and territories', 'Dental services'.

BACKGROUND

Niue is one of the smallest islands in the South Pacific. The population is predominantly made up of indigenous peoples with approximately over 1,600 people inhabiting the land (Government of Niue, 2021). Niuean people engage in a variety of risk factors that contribute significantly to poor dental hygiene such as tobacco use and poor nutrition. This is alarming as these risk factors increase the likelihood of other health problems for instance, the development of non-communicable diseases like cardiovascular disease and diabetes (Nosa, Roberts, Raj, Bell, 2013). The increase in these risk factors are linked to the import of foreign goods into Niue and, the introduction of high-in-sugar Western foods (Nosa, Roberts, Raj, Bell 2013). There is a lack of current and up to date information surrounding dental services in Niue as the last published evaluation of these services was conducted in 1983. The aim of this paper is a document analysis of dental reports from the period of 2011 to 2018.

METHODS

A total of seven dental reports were analysed from the dental clinic in Niue located at the Niue Foou Hospital in Alofi, Niue Islands. The dental reports span from July 2011 to July 2018 and contain a wealth of information including clinical data, key challenges faced, achievements obtained, and recommendations for improvement. A document analysis of these dental reports was carried out by identifying the most repeated ideas within each section mentioned above. Document analysis is a qualitative research method that involves analysing and interpreting data from documents or records relevant to a study (Bowen, 2009). This method is used quite prominently in public health research and was important in this project as it created a clear picture of the main dental treatments received in Niue as well as common issues faced specifically by the dental team.

RESULTS

Clinical Data

The dental team in Niue have been very consistent in collecting dental information with clinical data ranging from the years 2011 to 2018. The information measured are total estimates of each year including number of patients treated, caries and periodontal extractions carried out as well as other extractions. Data collected from the Niue Primary School and the Niue High School highlight the dental caries experience of the student population through the decayed, missing or filled teeth index.

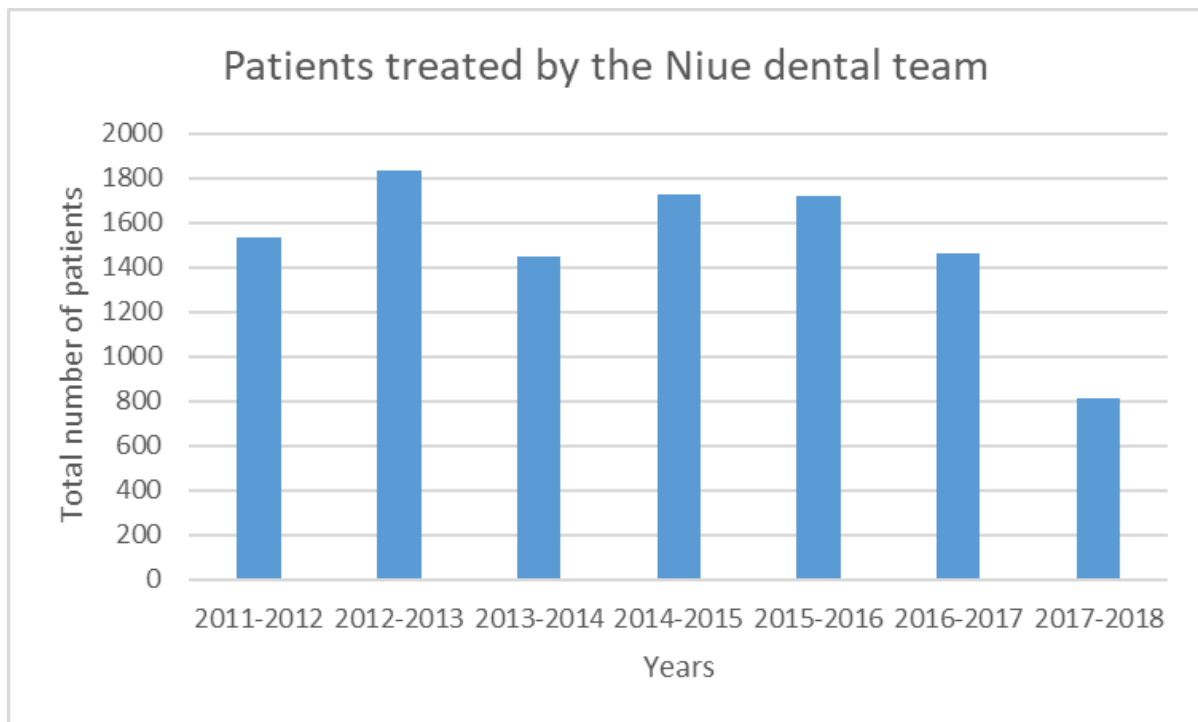


Figure 1. Illustrates the number of patients seen on a yearly basis from July 2011 to July 2018.
The number of patients treated appears to have declined in recent years however this cannot be confirmed due to inconsistent data collection and recording.

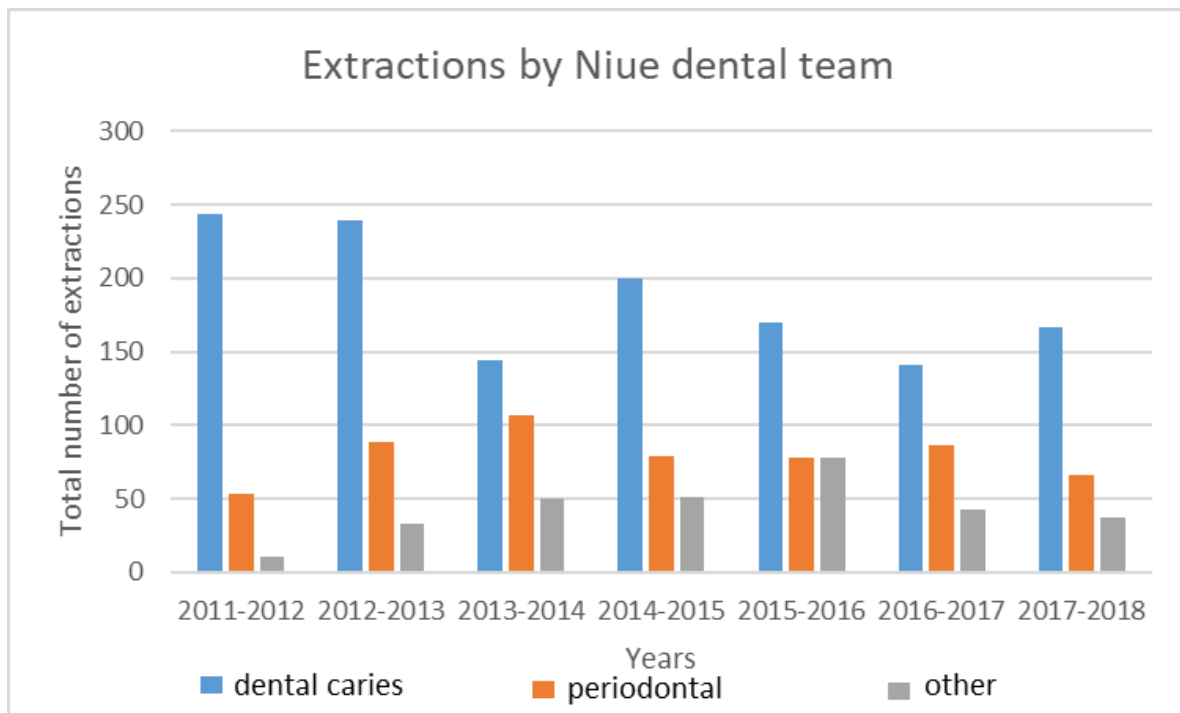


Figure 2. Dental caries appears to be the most common reason behind tooth extractions in Niue followed by periodontal diseases and all other oral health issues

The gap between dental caries extractions and other extractions has reduced significantly however dental caries extractions remains the highest. The number of periodontal and other extractions have been relatively stable over the past seven years with no significant increase or decrease.

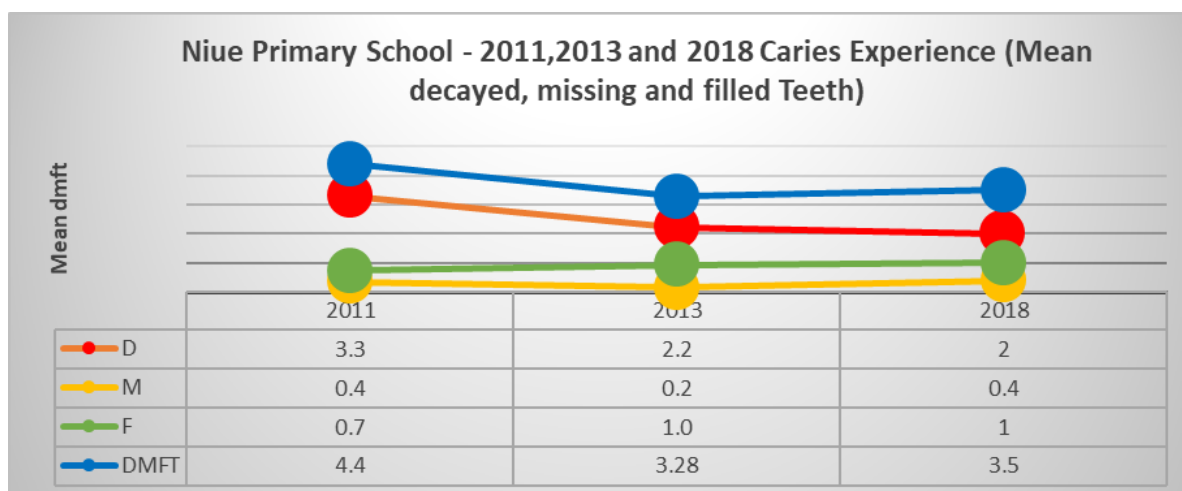


Figure 3. 189 children were examined which is 93% of students. On a global scale, Niue Primary School is moderate in terms of the mean decayed, missing and filled teeth index. There has been an increase in dental caries among this population despite an increase in treatments administered.

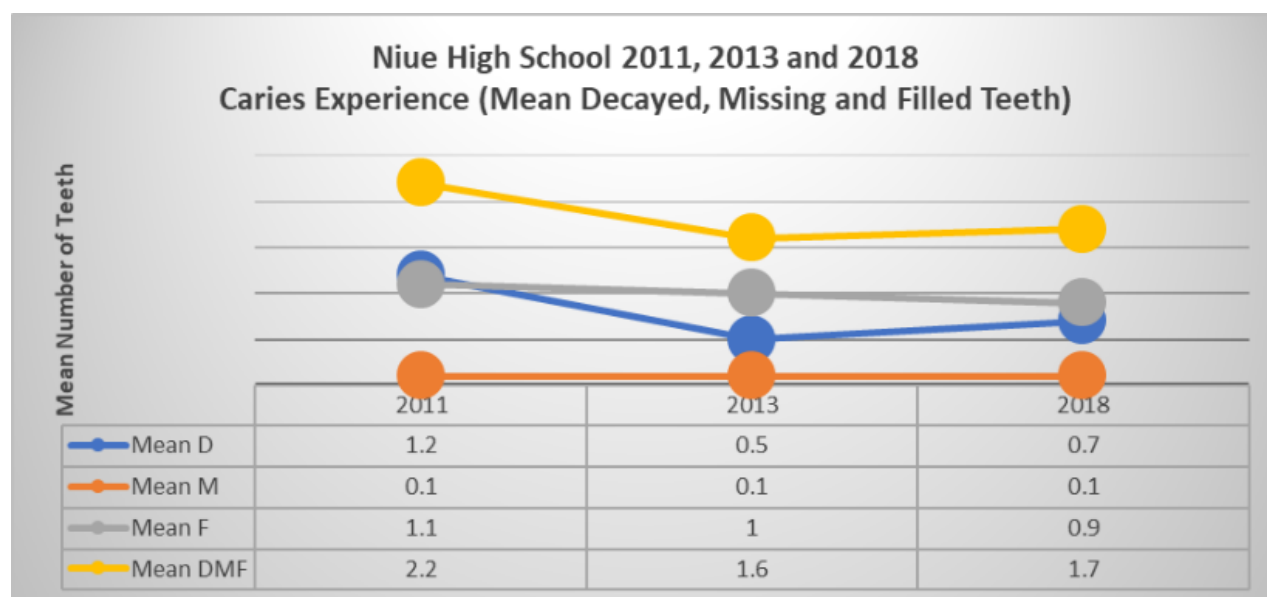


Figure 4. 171 children were examined which is 79 percent of students. Niue High School is low in terms of mean decayed, missing and filled teeth values for permanent teeth. The percentage of students free from caries experience has increased and more dental caries treatment administered.

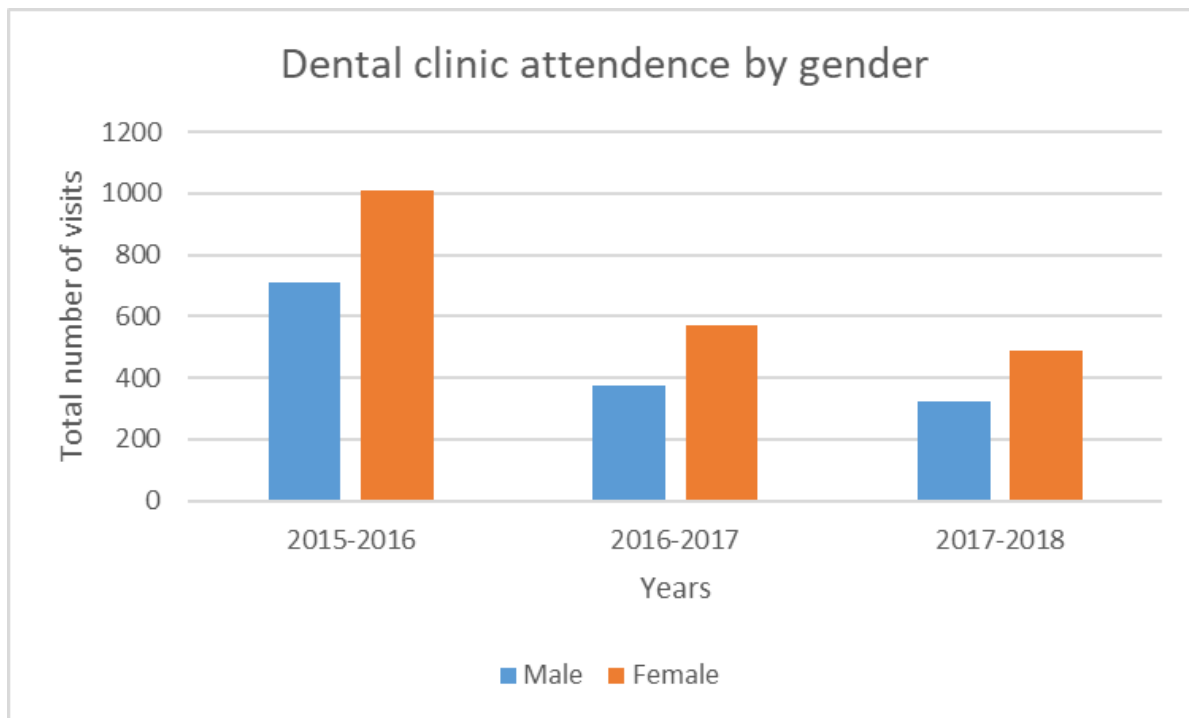


Figure 5. Comparison of patients treated by the Niue dental team according to gender for the years 2015, 2016 and 2017.

The above data shows that women engage in dental services more than men. For both men and women, there has been a decline in dental clinic attendance.

DISCUSSION

The Niue dental team should be commended for their consistent monitoring of dental services over the past seven years. The information gathered from the document analysis has been useful in gaining a clear understanding of the main treatments delivered by the dental team as well as the areas that need improvement. The clinical data shows that the most common form of treatment carried out are dental caries extractions followed by periodontal and other extractions. In terms of disease prevalence, the dental team have only recorded information on dental caries experience specifically among those attending primary and secondary school. This information is not enough to determine the prevalence of other oral health issues among the wider population however it does indicate the rates of dental caries among children. The dental team have reported that there is still a high-unmet need among Niue Primary School students with sixty percent of students experiencing untreated dental caries.

In contrast, the decayed missing or filled teeth rates among Niue High School students are relatively low indicating a lower prevalence of dental caries. Perhaps this calls for a need to invest in more targeted oral health strategies. One recommendation is to improve oral health programmes in schools specifically to reach the sixty percent of primary school children who are not being treated. It is interesting that the prevalence of untreated dental caries remains high despite an increase in delivery of treatments. The dental team suggest that it may be due to younger children being more likely to fear receiving dental treatment. If this is the case, then it may pay to develop interventions that are less intimidating to children. The 'MaliMali'

programme delivered in Tonga is a great example of an oral health programme for children and has shown to be successful and affordable. This programme involves actively working in primary schools through toothbrushing instruction, oral health education and periodic mouth rinsing with fluoride (Takeuchi, Kawamura, Kawamura, Endoh, Uchida, Taguchi, Nomoto, Hiratsuka, Fifita, Fakakovikaetau, Kobayashi 2017).

Implementing a similar programme in Niue may help to produce better oral health outcomes among the student population.

Another recommendation to address the rates of dental caries among children could be to implement healthy public policies. According to the World Health Organization (2015) preventive measures should be prioritised over treatment. The dental team in Niue recognise the relationship between oral health and NCDs however little is being done to address the common risk factors such as excessive intake of free sugars (Petersen E. 2003) (Tut, Langidrik, Milgrom, 2007).

Policies like imposing a sugar tax may be beneficial as it could deter people from consuming foods that are not good for their health as well as generate revenue to help invest in more resources and better dental services (Sarlio-Lähteenkorva, Winkler, 2015).

This may be difficult to implement due to political barriers however success in countries such as Mexico highlight the importance of considering such policies in helping to decrease the burden of dental caries and minimise the risk of other Non-Communicable Disease (Colchero, Rivera-Dommarco, Popkin, Ng, 2017), (Tuisuva, Pushpaangaelo, Morse, 2001). In terms of dental services, a key challenge identified across the document analysis was a lack of resources and dental staff. The dental team mentioned resources and equipment being a challenge a total of eleven times. This included the absence of working dental chairs, having only one computer and delayed procurement processes. In terms of staff shortage, there were issues mainly pertaining to decreased staff morale and the need to recruit more dental technicians and assistants. Issues surrounding lack of resources and equipment make it difficult for staff to operate efficiently and effectively, greatly impacting delivery of care. The dental team's inexperience with MEDTECH was also an issue and was mentioned a total of seven times. MEDTECH is an electronic database which enables health professionals to safely and efficiently store patient information such as dental records. Despite being implemented in 2013 there has been consistent issues pertaining to its use continuing all the way up to 2018. Some of these issues include technical problems and unfamiliarity with MEDTECH functions. Having only one computer also complicated the situation as it increased the likelihood of incorrect data entry. As a result, in terms of data documentation the dental team faced many issues around records monitoring, report writing and being able to distribute and analyse health data in a timely manner. A lack of continued professional development was also a key challenge that was mentioned a total of six times. This included limited opportunities for staff to attend overseas training. Although the dental team were able to make some progress by integrating continued professional development through online courses and clinical presentations, these online learning practices do not suffice for hands on clinical practice. This limits the capacity for staff to improve from current standards which can be problematic as health issues and needs are continuously changing. The main barrier to strengthening continued professional development was a lack of funding.

Regional collaboration may be useful in addressing these issues of limited resources and manpower. By developing collaborative networks, there is significant potential for both resources and workers to be shared and distributed according to need. (Tatui, McCool, Nosa, 2018). The Oral Health Pacific Islands Advisory Forum (OPIA) is a network that was established in 2014 with the goal of addressing inequitable distribution of dental personnel in the Pacific as well as to ensure the nations in the Pacific receive accessible, affordable and quality health services, (Tuisuva, Pushpaangaelo, Morse, 2001), (Tatui, McCool, Nosa, 2018). Developing such networks could be advantageous in terms of meeting the specific needs of each island. For example, the network could send a few people over who can teach the dental staff in Niue how to properly use MEDTECH systems and to stress the importance of accurately recording patient information. Similarly, the network could donate more computers or dental chairs to the practice to help improve the efficiency of services. Regarding CPD, health issues are often experienced differently in the Pacific compared to the Western world. Regional collaboration not only strengthens leadership in the Pacific but ensures professional development opportunities that are specific to the needs of the Pacific (Doherty, Blinkhorn, Vane, 2010), (Pili, Nosa, Tatui, 2021). Having these networks make it easier to prompt action as they can advocate on behalf of small countries like Niue to receive funding or assistance to deliver optimal dental services and produce better health outcomes.

Despite the setbacks that these challenges bring, the Niue dental team have achieved some improvements over the past seven years. One major achievement was the establishment of the 'Atuhau Mamali' Programme which was initiated in 2014. This is a pre-school based oral health screening programme that is delivered throughout the community. The activities conducted under this programme include oral health checks, nutritional assessments, head-to-toe examinations as well as updating children's vaccination records. There is little information surrounding the success of this programme in improving oral health outcomes however it has made great progress in strengthening preventative services. In terms of continued professional development, some funds were made available in 2015 which allowed for the attachment and upskilling of one staff member in 2016. Although there is still much room for improvement, this is one step in the right direction. Some other achievements that the dental team have made address challenges that were previously stated in the dental reports such as reducing noise pollution from the dental compressor, allocating a budget for Personal Protective Equipment (PPE) and establishing more structured clinical guidelines and protocols to safeguard staff and patients from occupational hazards and emergencies.

It is important to know the demographics of the patient population to understand the context of the issue and the distribution of burden. This may be useful for the government as well as the dental team in determining where resources and efforts should be targeted the most. There is a great need to improve the rigour of data collection by the Niue dental team as their methods thus far have been inconsistent. There are some issues around the consistencies for recording dental data, but this is a work in progress where data recording will be a key factor in developing and improving the oral health in Niue. This is problematic as resources in Niue are limited and must be distributed efficiently. It could be valuable for Niue to invest in developing a national oral health survey to gain a true understanding of the population that they are serving and common risk factors contributing to oral health issues.

Limitations

Although the data presented has given great insight into some issues faced by the dental team in Niue, there are several gaps in the data that make it difficult to form meaningful conclusions on the actual oral health status of the population. One of the biggest issues is lack of specificity and explicitness in data recording. There is no information on the demography of patients such as ethnicity, village affiliation, age groups and whether they are local dwellers or visitors. The dental team have reported the proportion of patients that are male or female however this has only been recorded in the last three years.

CONCLUSION

The Niue dental team should be commended for their efforts to collect patient information over the past seven years. Dental caries appears to be the main oral health issues treated by the dental team however this conclusion may only be drawn from the data presented. There is a great need for rigorous data collection to gain a more accurate reflection of oral health issues in Niue. To improve dental services, consistent issues concerning lack of resources, MEDTECH use and continued professional development frameworks must also be addressed. Further recommendations made are to improve oral health programmes in schools, introduce healthy public policies and strengthen collaborative networks across the region.

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