

Orthodontic Manpower Requirements of Trinidad and Tobago

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ABSTRACT

Objective: A study was done to estimate the orthodontic manpower requirements of Trinidad and Tobago.

Methods: A questionnaire was administered via e-mail to 9 of 11 orthodontists. Information from a population census, a report on the orthodontic treatment needs of children in Trinidad and Tobago and this questionnaire were used to calculate the number of orthodontists and chairside orthodontic assistants needed in Trinidad and Tobago.

Results: On average, 50 per cent of the 289 patients treated by each orthodontist in Trinidad and Tobago annually are children. Approximately, 13 360 patients can be expected to demand orthodontic treatment every year in this country. The number of orthodontists and chairside assistants required to treat these patients was estimated to be 44 and 154, respectively.

Conclusions: Currently, Trinidad and Tobago only has a quarter of the number of orthodontists and orthodontic chairside assistants required to treat the number of patients in need. As the demand is relatively high in Trinidad and Tobago and the number of orthodontists has increased slowly and inadequately for the past decade, the orthodontists are likely to remain adequately employed and happy with their job unlike dentists who are currently in private practice for less than a year.

Keywords: Index of Orthodontic Treatment Need (IOTN), manpower, orthodontic assistant, orthodontist

Necesidades de Personal de Ortodoncia en Trinidad y Tobago

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RESUMEN

Objetivo: Se realizó un estudio con el propósito de calcular la necesidad de personal para el trabajo de ortodoncia en Trinidad y Tobago.

Métodos: Se administró una encuesta via correo electrónico a 9 de 11 ortodoncistas. La información de un censo de población, un reporte sobre las necesidades de tratamiento ortodóncico de los niños en Trinidad y Tobago, así como esta encuesta, se usaron para calcular el número de ortodoncistas y asistentes dentales de ortodoncia necesitados en Trinidad y Tobago.

Resultados: Como promedio, el 50 por ciento de los 289 pacientes tratados anualmente por cada ortodoncista en Trinidad y Tobago son niños. Puede esperarse que aproximadamente 13360 pacientes pidan tratamiento de ortodoncia todos los años en este país. Estimados indicaron que el número de ortodoncistas y asistentes ortodoncistas requeridos para tratar a estos pacientes es 44 y 154, respectivamente.

Conclusiones: Actualmente, Trinidad y Tobago sólo tiene un cuarto del número de ortodoncistas y asistentes de ortodoncia requeridos para tratar al número de pacientes con necesidades. Como que la demanda es relativamente alta en Trinidad y Tobago y el número de ortodoncistas ha aumentado lenta e inadecuadamente en los últimos diez años, es probable que los ortodoncistas permanezcan

adecuadamente empleados y felices con su trabajo, a diferencia de los dentistas que están actualmente en la práctica privada por menos de un año.

Palabras claves: Índice de necesidades de tratamiento ortodóntico (INTO), personal, asistente dental de ortodoncia, ortodoncista

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INTRODUCTION

Dental manpower planning is complex to the extent that determination of manpower requirements cannot be as accurate as desired. Many variables have to be considered; some of these can be accurately predicted and used in simple calculations but any mathematical model used for dental manpower planning will not produce reliable results due to the number of variables and their relative interdependence. This has been shown with criticisms that reveal serious methodological shortcomings of the World Health Organization's model for the planning of oral health services and care (1, 2).

Dental specialist manpower requirements may be more difficult to estimate and predict accurately but they are also important and beneficial for planning. This information is of great use for clinicians (as suppliers of services), patients (who demand services), government bodies and insurance companies (who partially fund these services) and manufacturers and suppliers of products used in providing these dental specialist services. To provide useful and relevant information, the focus of this investigation was narrowed to the speciality of orthodontics.

Dental specialist manpower requirements were estimated for Caribbean countries in 1999 using three variables in a simple mathematical model applied for each country: the number of dental specialists, the size of the population and a common acceptable specialist/population ratio. This investigation aims to re-evaluate the current orthodontic manpower requirements of one Caribbean country, Trinidad and Tobago, by using more variables and thus improve the state of knowledge on orthodontic manpower requirements of Trinidad and Tobago.

SUBJECTS AND METHODS

Trinidad and Tobago is a twin island Caribbean country with an area of 5128 km². The country was divided into five geographical zones (North-West, North-East, Central, South and Tobago) for a questionnaire survey administered to orthodontists in 2011 to establish similarity to the prospective cross-sectional study of orthodontic treatment needs of 11- to 12-year old children done in 2009. The population and mean population density are approximately 1 310 106 and 257 per km², respectively (3).

There are 11 orthodontists in 15 offices in Trinidad and Tobago (as five practice in two offices in Trinidad and Tobago and two orthodontists share their two offices). To increase the accuracy of the investigation, questionnaires

were sent in June 2011 to the nine orthodontists in 11 offices that satisfied these inclusion criteria: (i) the orthodontist must be in practice for at least 10 years and (ii) the orthodontic office must have been established at least five years ago. Six of the orthodontists practising in eight offices returned the questionnaires by *e-mail* within four weeks to make a response rate of 66.7 per cent (for both orthodontists and offices).

Half of the 14 items in the questionnaire were coded; frequencies and standard deviations were determined for all data obtained from the questionnaire with the confidence level set at 95 per cent using Microsoft Office Excel (version 2003). The annual number of patients who started treatment with the orthodontists surveyed was estimated by multiplying the number of patients treated per fortnight by 1.41667 as this factor was found to be common amongst some of the orthodontists.

RESULTS

Four of the eight orthodontic offices described in this study are located in the North-West zone (in the capital city); one is in the North-East zone; one Central and two South. The age of these offices ranged from 10 to 40 years with a mean of 19 years and a standard deviation of 10 years. Four of the 11 orthodontists in Trinidad and Tobago are female and two of three female orthodontists surveyed returned the questionnaire.

The number of patients who started treatment by each orthodontist per year was estimated to range from 108 to 447 with a mean of 289 and a standard deviation of 128. The percentage of these patients who are children ranged from 40 to 66.7 with a mean of 50 and a standard deviation of nine. Applying these two sets of data, the estimated number of children treated per year by each orthodontist ranged from 54 to 268 with a mean of 155 and a standard deviation of 78.

The total average number of children estimated to have started treatment each year by the orthodontists who participated in the survey is 929. Considering the location and ages of offices for the orthodontists who were not included in the survey, 373 other children were estimated to have started treatment also, giving a total of 1302 children for Trinidad and Tobago. Using the Index of Orthodontic Treatment Need (IOTN) in 2009, 61.4% of 11- and 12-year old school children in Trinidad and Tobago were in definite need of orthodontic treatment for dental health reasons. The number of schoolchildren of that age is approximately 10 880 so at least 6 680 schoolchildren in Trinidad and Tobago are ex-

pected to need treatment from orthodontists annually. As the average percentage of patients who are children and obtain treatment from orthodontists in Trinidad and Tobago is 50, the number of patients who can be expected to demand treatment from orthodontists every year is 13 360.

The maximum number of patients treated by orthodontists in Trinidad and Tobago per year was estimated to range from 114 to 473 with a mean of 306 and standard deviation of 136. Using this mean, the minimum number of orthodontists needed for the estimated number of patients demanding treatment is 44. Each orthodontist works with three or four chairside assistants with only one office using two and another using five. The minimum number of chairside orthodontic assistants needed in Trinidad and Tobago therefore appears to be 154.

Most orthodontists who participated in the study stated that they were "happy" with their job and more were "very happy" than just "satisfied". Despite this, in only half of the offices, the orthodontists felt that they were "adequately employed"; most of the rest felt that they were "under-employed". These orthodontists also felt that their chairside assistants were adequately employed in most offices; only in two offices (in the capital city) were they perceived to be under-employed.

DISCUSSION

The small size of the sample of orthodontists may not appear to be ideal. As Trinidad and Tobago is a twin-island state that has a small area and is not as socioeconomically developed as a typical Western European or North American country, it is reasonable to expect that the number of orthodontists in this country would be small and that the sample size will consequently be small. As a very good response rate was achieved, the sample is actually a much bigger proportion of the body of orthodontists than is normally reported and is thus representative and appropriate.

The proportion of the standard deviations to their means indicates that the results can be relied on for planning manpower requirements. The number of orthodontists needed in Trinidad and Tobago was previously reported to be 28 but this was based on the assumption that one orthodontist would be adequate for every 50 000 people. This ratio may be a good average in most western developed countries and states but a later study has shown that the ratio would have to be different as the percentage of children with a definite need for orthodontic treatment in Trinidad and Tobago is two times higher than in typical western countries and states. As more variables can now be taken into consideration, a more accurate and bigger estimated requirement of 44 orthodontists has been made. Despite this requirement being bigger, it is actually a conservative estimate based on the belief that the orthodontists are more likely to remain adequately employed and happy with their job with their case loads averaging out at a relatively high number of 306 cases started annually.

Most of the orthodontists in Trinidad and Tobago are located in the capital city and half of them practice in the other city. Only one is in the smaller island of Tobago and all offices are in urban developments close to where most of the population works or attends school. This distribution of orthodontists is typical of most western countries and states (4).

The number of patients treated annually, or within any other time period, is not reported well enough for other countries or states to make useful comparisons. This number varies mainly according to the efficiency and abilities of an orthodontic practice, the size of the population that needs and wants treatment and the state of the economy which greatly influences the last factor – demand for orthodontic treatment (5). As patients in Trinidad and Tobago seek treatment near to and far from their homes and/or workplaces/schools due to referral, recommendation or reputation and consideration of proximity, vehicular traffic to/from and within urban areas, costs and other factors, the number of patients treated by an orthodontist in this country can fluctuate and vary significantly.

Results from this investigation indicate that more patients are seen in practices that have been established for longer periods. This has been reported by others and is expected partially to the greater experience of the orthodontist within 10 years producing more efficiency, desire for more productivity and an enhanced reputation (6). Like all other Caribbean island countries, the number of orthodontists in Trinidad and Tobago is so small that it is rare for an orthodontic practice to be transferred from a retiring or migrating orthodontist to an orthodontist who is (relatively) new to the scene. The results from this study also showed that a relatively new or young orthodontist can expect to treat a large number of patients that is commensurate with the age of the practice more than the experience and/or age of the orthodontist. With this knowledge, as new orthodontists emerge in the Caribbean and increase the numbers in practice in any of these small countries, some should seek to purchase orthodontic practices of retiring orthodontists when the opportunity arises.

As the number of orthodontists in Trinidad and Tobago increases toward four times the present number, the number of chairside assistants and other support staff required will increase proportionally. Chairside assistants in Trinidad and Tobago have technical skills and knowledge that is largely taught in the private orthodontic office over a period of one or more years instead of in one to two years in an Associate Degree programme in a university setting. As most orthodontic assistants tend to continue with their occupation and/or employer for four or five years instead of much longer, and 15 years was the only exception found in this investigation, the need for training of orthodontic assistants in a university dental school setting is presently in great demand and can easily grow.

Similarly, the local university school of dentistry produces 30–35 dental graduates annually and approximately

15–20 of these dentists enter the local job market without any production of dental specialists. The Dental Council of Trinidad and Tobago (DCTT) has amongst its members a very small percentage of dental specialists and this percentage is decreasing over the years as a result of the rates of increase in numbers being more for general dental practitioners than for specialists. With a university degree allowing freedom of movement to work in Caricom countries (members of the Caribbean Community) and local, British, American and Canadian dental degrees being automatically recognized by the DCTT for registration to practice dentistry in Trinidad and Tobago, the number of orthodontists can increase (or decrease) significantly and suddenly. The University of the West Indies has dental schools in Trinidad and Tobago and Jamaica and hopefully will become more involved in the plans needed to increase the number of orthodontists and other dental specialists in Trinidad and Tobago and other Caricom countries.

In summary, Trinidad and Tobago only has a quarter of the 44 orthodontists required to meet the demand indicated by the level of orthodontic treatment needs found in school-children. This number will vary and change with the age of the orthodontic practice, the age of the orthodontist, the location of the offices, the number of patients demanding

treatment and other factors that are numerous but likely to be less important. As the demand is relatively high in Trinidad and Tobago and the number of orthodontists has not increased more than one every two years since the DCTT started keeping a record in 1981, the orthodontists are likely to remain adequately employed and happy with their job unlike a large percentage of dentists who are relatively new to the patient population.

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