The Contributions of Dental Therapists to Improved Efficiency and Greater Capacity in the Dental Centers of Apple Tree Dental in Minnesota

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INTRODUCTION

Dental therapy is a new workforce model in which the clinician is trained to perform preventive and basic restorative dental services (positioned as a mid-level provider in dentistry).

Interest exists in understanding how introduction of the dental therapy work force to oral health care teams has impacted service mix, quantity and quality of care, and capacity of the delivery system.

Apple Tree Dental in Minnesota, a large non-profit community dental provider was among the first employers of dental therapists (DTs) in 2012.

Patients at Apple Tree Dental comprise all age groups, many of whom have special health care needs and the vast majority of whom are low-income and Medicaid eligible.

This study examined patient encounter data from Apple Tree Dental to describe and compare the type and quantity of services provided by dentists before and after introduction of dental therapy to the practice.

METHODS

Data Source: Encounter data that include more than a quarter of a million encounters for 76,342 patients obtaining care in 1 of the 7 dental centers operated by Apple Tree Dental.

Variables: Date of service, type of dental services provided, profession of clinical provider, and characteristics of patients.

Study Period: Services provided from February 9, 2009 (3 years prior to the first employment of a DT at the organization) through July 31, 2019.

Dental Centers: Coon Rapids (urban area) and Madelia (rural area) were selected because they had 10-year data and continuously employed a DT.

Study Outcomes:

Types of dental services performed by dentists before and after introduction of DTs at Apple Tree Dental in early 2012.

Changes in intensity and distribution of services described in terms of Relative Value Units (RVUs):

- RVUs represent sums of values attributed to various aspects of a dental procedure including the extent of professional training, complexity of the skills necessary, and costs of required resources.

Economic impact of dental therapy practice on organizational revenue changes in the numbers and types of procedures, the relative value of procedures (RVUs), and fees (adjusted to 2018 fee levels) per patient treatment day in each year.

Population Studied: During the study period, 15 DTs were employed by the organization along with more than 30 dentists and 30 dental hygienists. The main analytics were derived from the 2 dental centers with 10 years of patient encounter data.

Principle Findings: Results showed an increasing trend in the average number of procedures (P<0.001) and patient visits (P<0.001), particularly the proportion of children (P=0.009) per treatment day by a dentist after introduction of DTs. Dentists’ production showed an increase in service intensity over the 7-year period after introduction of DTs from an average of 48.4 RVUs per treatment day in 2012-13 to 60.2 RVUs in 2018-19 (P<0.010). Similarly, average fees per treatment day increased from $3,381 in 2012-13 to $4,194 in 2018-19 (P<0.048).

Conclusions: The introduction of DTs to clinical teams enhanced capacity and productivity at Apple Tree Dental.

RESULTS

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<th>Average # Procedures/Treatment Day</th>
<th>Children (&lt;18 years)</th>
<th>2010-11*</th>
<th>2018-19</th>
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Average fees produced by a dentist per treatment day increased after introduction of DTs from $3,381 in 2012-13 to $4,194 in 2018-19 (P<0.010).

Almost 50% of fees generated by dentists in 2018-19 were from restorative procedures; there was a positive trend in the proportion of fees from restorative services provided by dentists between 2012 and 2019 (P<0.048).

CONCLUSIONS

Study findings suggest that both the number and complexity of procedures provided by dentists increased in the years subsequent to introduction of DTs to the centers’ dental teams in early 2012, particularly after they were fully integrated.

In addition, the number of total patients as well as Medicaid beneficiaries increased concomitant with the introduction of dental therapy to the Apple Tree Dental reflecting organizational expansion.

The introduction of DTs to clinical teams enhanced capacity and productivity enabling Apple Tree Dental to meet increasing demand from the patient population, many of whom are low-income patients, Medicaid eligible, and/or have special health care needs.

AKNOWLEDGEMENTS

The authors wish to thank the staff at Apple Tree Dental particularly Dr. Michael Holgerson, Chief Executive Officer, Deborah Jacobs, RDH, MA, Philip Director, Brenda Prosa, Information Systems Director, Barbara Smith, RDH, MPH, PhD, Co-Founder and Board Member, and Angela Lohmann, Accounting Assistant and Payroll for their help with data compilation and project management.

This work is supported by the Health Resources and Services Administration (HRSA) of the US Department of Health and Human Services (HHS) as part of an award totaling $449,432. The contents are those of the authors and do not necessarily represent the official views of, nor an endorsement by, HRSA, HHS, or the US Government.