Case histories in Dental Informatics (DI) by TeethCloud Board Members

Title of the work in DI

QUANTIFYING THE OUTCOMES OF DENTAL HEALTH MEASURES
- Monitoring the impact of oral health promotion projects
- Evaluating the wellbeing of dental professionals
- Measuring how telehealth appts can impact behaviour change related to oral health

Thought Leader name	Victoria Wilson
Date	April 2023

Brief description of the work performed

1. Through supporting the ongoing developments of oral health promotional project I measure the impact of the support and mentoring and the impact of the intervention of the project.
2. Through evaluating the negative impact from the dental profession evidence based interventions are modified and offered to the dental profession. Ongoing evaluations are completed by the target cohorts and the impact of such interventions are evaluated
3. Evidence based behaviour change interventions are utilized via tele health appointments and the patients change in habits are evaluated

Purpose of the work performed

1. To understand more within oral health promotion, and have an insight into the development of a broad range of oral health promotion projects and learn from the varied interventions
2. To learn how to support the dental profession through protective factors that can be practically applied and understand the evidence of these, and impact to be part of improving the wellbeing of the dental profession
3. To understand the most effective behaviour change models that can be used via telehealth to support more effective behaviour change and habit forming that can improve oral health

Relevance to DI

The relevance of DI allows us to learn and measure the learnings, identify trends that can be utilized for further developments and advancements.

Benefit of achieved results, compared with the situation from before applying DI

The benefits of DI have contributed to the direction of the ongoing work, allowing the ongoing developments of the work to be evidence based.

DI-method used

Form development of questionnaires, predominantly and collation of answers.

DI-technology and/or software tools used

Jot form.

Title of the work in DI

TRACKING THE ORAL HEALTH CONDITION OF PLANTATION BAY RESORT & SPA EMPLOYEES

Thought Leader name	Clarissa Jane F. Pe, DMD, MM
Date	April 2023

Brief description of the work performed

Oral health charting with intra-oral photos of 500+ employees of the resort were charted from 2017, 2018, 2019, and 2022. Annual Oral Prophylaxis was done followed by restorative, oral surgery, endodontics.

Purpose of the work performed

To prove that proper oral health improvement can be tracked using cloud based dental charting is one way of doing evidence-based dentistry as basis for analytics over a small or large population.

Relevance to DI

Preserving the oral health data collected over the years can be used for data analytics stored over several years using digital informatics.

Benefit of achieved results, compared with the situation from before applying DI

Having the data preserved accurately and consistently enabled data comparison and analytics which proved that oral health interventions/ procedures improved the overall health of the employees. Baseline DMFT score was established to be 97% in 2017 and in 2019 showed a marked decrease of DMFT score to 56%.

DI-method used

Digital charting was used every time the patients came in for their annual oral prophylaxis with intra-oral photos taken after each procedure. Data analysis was done using the stored patient charts.

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DI-technology and/or software tools used

DentalCharting.com was used since the beginning of the engagement of the resort in 2017 up to the present.

Title of the work in DI

IMPACT OF COVID-19 ON EMOTIONAL/MENTAL HEALTH OF ORAL HEALTH PROFESSIONAL STUDENTS

Thought Leader name	John M. Cutter (co-author with Global Member, Carlos Pizarro, D.M.D.)
Date	December 2022

Brief description of the work performed

A global survey exploring the impact of Covid-19 on the emotional/mental health of students during the pandemic (2020-2022) who were studying for careers in oral health. The survey identified not only the salient parameters of anxiety/depression, but also the triggers that may have additionally contributed to negative outcomes in emotional/mental health.

Purpose of the work performed

To address the outcry from oral health professional students who felt largely abandoned during the pandemic and whose academic/emotional needs were not being addressed and/or supported by their institutions. Additionally, the survey sought to assess whether there was an increase in student decisions to leave the oral health professions as a result.

Relevance to DI

DI (in this case, machine learning modeling) not only strengthens the validity of the data results obtained, but also provides insights into predictive parameters that may apply to future surveys.

Benefit of achieved results, compared with the situation from before applying DI

Identification of • Accuracy of the evaluated metrics • Precision of the evaluated metrics • Variable coefficients of prediction that may be used as benchmarks in future studies/surveys

DI-method used

A selection of algorithms for machine were run for the data obtained and included:
- Logistic Regression
- Random Forest
- Gradient Boosted Trees
- Decision Tree

Logistic Regression and Random Forest proved to be the most accurate and precise.

DI-technology and/or software tools used

Dataiku DSS (as provided by George Joseph, our Thought Leader for Cyprus)

Title of the work in DI

DI-MATURITY INDEX

Thought Leader name	Wouter Put
Date	April 2024

Brief description of the work performed

On a scale of 0-5, the DI-maturity index indicates progression in the professional use of DI and is determined by these categories:

- Digital patient record
- Digital clinic management
- Digital patient access / Teledentistry
- Digital X-ray and/or AI diagnostics
- Digital intraoral camera
- Digital dental scanner and CADCAM
- Digital lab order
- Digital dental insurance
- Digital research data / oral health statistics

Purpose of the work performed

The purpose of the DI-maturity index is to provide, by means of a quantified score, a simple measure for evaluating the level of the professional use of and experience with digital capabilities in dentistry.

Relevance to DI

The relevance of the tool to the deployment of Dental Informatics, is to provide users with a sense of advancement in the application of DI in their daily professional work.
The DI-maturity enables to set a DI development agenda, striving for the next higher index level.

Benefit of achieved results, compared with the situation from before applying DI

Until 2022, no indicator existed for the purpose of quantifying the advancement of the use of digital capabilities applied in dentistry.

DI-method used

Of the nine categories listed above, the score of each individual category is recorded, weighted and mathematically compiled, resulting in the index, which consists a maturity score and a maturity level.

DI-technology and/or software tools used

The DI-maturity index measurement tool resides on www.teethcloud.org and is online available to TeethCloud members.

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Title of the work in DI

Save a Tooth, a Life, a Nation

| **Thought Leader name** | Rose Nobbley |
| **Date** | August 2019 |

Brief description of the work performed

School-based delivery and execution of preventive dental hygiene services that are
- Accessible
- Replicable
- Low cost

Purpose of the work performed

Purpose is to
- Increase oral health awareness
- Demonstrate dental hygienist's role in public health
- Establish a standard care model utilizing DI for dental missions
- Demonstrate how DI can track patient care to improve overall health for better quality of life

Relevance to DI

DI demonstrates preventive dental services can be offered economically while providing insight to the extent of impact it can make in addressing oral health disparities.

Benefit of achieved results, compared with the situation from before applying DI

The benefits are
- Identification of impact of services rendered
- Identification of impact of services not rendered
- Identification of baselines for future studies/surveys

DI method used

Electronic dental record with built-in automatic statistics generation and analytics.

DI-technology and/or software tools used

www.dentalcharting.com