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Research Article

A Conceptual Evolved Model of Dental Practice - The Ideologies of an Inter-disciplinary Team (IDT)

Monu Survashe[1]* and Anita Merani[2]

[1]*Ziecon Advanced Dental Clinic and Research Centre, Nashik, Maharashtra, India*

[2]*Bodymed Clinic, Nashik, Maharashtra, India*

***Corresponding Author:** Monu Survashe, Ziecon Advanced Dental Clinic and Research Centre, Nashik, Maharashtra, India.

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Abstract

The present study explores the ideologies of an interdisciplinary team for better patient centered healthcare outcomes. The principles studied in the literature review were used to formulate a conceptual design of IDT. A conceptual design was then planned for cessation of tobacco smoking among diabetic patients by the dentist and the physician who specializes as a certified health coach, to reduce the burden of the underlying systemic issues along with the dental treatment.

Keywords: Inter-disciplinary Team (IDT); Multi-disciplinary Team (MDT); Healthcare; Diabetes; Tobacco Smokers; Diet

Introduction

The general structure of a dental multi-disciplinary team (MDT) is constituted by the general dentist along with clinical specialists and dental support staff. A typical patient who walks in for a dental treatment many times also presents with co-morbid conditions such as diabetes; obesity; gastro-esophageal reflux disorder (GERD); nutritional deficiencies; mental health disorders like stress and depression; sleep apnea; tobacco smoking, and its associated health issues, to name a few.

The authors have illustrated their point of view with examples from their dental clinical institution- some dental patients suffer from GERD (gastro-esophageal reflux disorder) which causes erosion of teeth and they claim to have relief from their symptoms of GERD on taking Homeopathy or Ayurveda treatment. Furthermore, the authors found that tobacco cessation by life style modification techniques instituted by non-dental specialists; like homeopaths, nutritionist and exercise specialist can have a positive outcome. A study[1] in Malaysia has stated that oral cancer patients need help with their nutritional issues and depression. Consideration of this study [1] the present authors think that it may be a good idea to have services of a nutritionist and counselor to improve the cancer patients' quality of life.

This matter brings us to the concept of IDT (Inter-Disciplinary Team), which is to treat the systemic causes of the dental disease and not just restore dentition. As a result it would be worthwhile to study the inclusion of other non-dental specialists for example physician; certified health coach; dietitian/nutritionist; psychiatrist; extended roles of homeopath, Ayurveda specialists etc. who can offer non-dental treatment modalities along with dental therapy to give the patient a holistic quality of oral health care service.

Hence the present study is going to look into the ideologies of the interdisciplinary team and to formulate a conceptual design of IDT to include non-dental treatment modalities along with the dental treatment.

Materials and Methods

In order to do this study we sourced literature from PubMed, Research gate, Elsevier Science direct (open access) and Google scholar, using the key words: multi-disciplinary Team (MDT); inter-disciplinary; healthcare, etc.

Literature Review

Conceptual model of the interdisciplinary team

In the health care scenario the word inter-disciplinary varies from multi-disciplinary [2] where inter-disciplinary is a more formal interaction as compared to multi-disciplinary where professionals of differing disciplines have a "loosely" shared responsibility of interface with the patients [2].

In this study, the design of the theoretical concept of IDT is explained on the basis of Donabedian's triad of structure, process and outcome [3,4].

Donabedian stressed that optimal strategies of care are based on an indirect measure of quality of care as to where and how the care is delivered. Healthcare being a system-with inputs, process and outcomes, needs continual designing and redesigning of the process which will give rise to better patient centered outcomes [5].

I. Structure is described under three main headings: Core team, Collateral Team, Physical infrastructure*:* The structure of the team must be dynamic with mature and dedicated team members who work in a flexible manner to meet the needs of the patient [6]. A good team must be headed by a worthy team leader with a vision and expertise to navigate the team effectively [6].

Core team: Dentist (general and specialists); dental hygienist; dental assistants etc.

Collateral team: Physician; Dietitian/Nutritionist/Certified health coach; Psychiatrist; extended roles of a Homeopath; Ayurveda specialist; Exercise specialist etc.

Physical infrastructure: One location; multiple locations.

II. Process is elucidated on the basis of the following elements [6]: teamwork; role development; networking/team building; training; collaboration; process audit and evaluation; communication skills and use of IT (Information Technology).

Teamwork

A dentist has to look beyond the role of a clinician to be a part of an inter-disciplinary team, so as to collaborate with the other health care professionals to provide wide-ranging care to improve the patient's wellbeing along with the oral therapeutic treatment and for general health care education.

A traditional dental team is used to a hierarchical method of working in contrast to the non-hierarchical collaborative team working which involves respect for each other's roles for improved decision making and efficiency. A collaborative team varies from the traditional team on the basis of these philosophies [2]: purpose- comprehensive care to the patient; priorities-diverse mix of medical, social services, psychiatry, dental treatment etc. tasks and personnel functions are not specifically delineated as they overlap; communication and decision making - has to be problem solving and discussion oriented.

Role development

To bring about actual teamwork among different professionals working under one roof or multiple locations, it is important to understand their role boundaries i.e. how will they go about negotiating a certain task and who will do what? - as different professionals are exclusive proprietors of their own sphere of influence [7], which has to be broken down to accommodate different individuals so as to bring about change in the patients treatment outcome [8]. This brings us to the concept of role development which is centered on the two main beliefs - autonomy i.e. independent self-determined practice [9] and collaboration- a process which entails joint intellectual involvement [10] in addition to peripherally influencing factors such as - features of the workplace, individual personal attributes of the professionals and interpersonal attributes like trust and leadership [11]. This study elaborates that by sanctioning the team members to develop their autonomy will in turn enhance the collaborative interface [11].

Team building/networking

It is a strategy to improve mutual understanding, respect, communication and thus patient outcomes [12]. Team building is described as group process intervention by way of group facilitated discussion to improve interpersonal relationship [13]. The goals/objectives are identified [6] and regular weekly follow-up meetings are held to update the team and resolve issues [12,14].

Training

The principles of collaborative team-work among oral health care professionals with other non-dental professionals is a formal arrangement and being diverse in nature needs to be taught to be effective in the first place [2,9,15]. Team training is based on training the professionals'- KSAs (Knowledge, Skills, Attitude) in a consequence free environment and measure it with tools like team task analysis, performance measurement etc. [16].

Salas., *et al*. [17] studied team training strategies such as cross training, team coordination, team adaptation and guided team self-correction training. They found that team training improves in the form of performance- both objective and subjective and it accounted for 19.4% variance on outcomes of co-ordination, communication and cooperation. A twenty percent variance in performance is positively enhanced by team coordination and adaptation training (0.45, $p < 0.05$); 37.2% variance in performance is attributed to guided team self- correction training (0.61, $p < 0.05$) [16].

Training the team well is important as it reduces patient errors or fatalities in the healthcare setting. An example of CRM (crew resource management) training based on didactic that is lectures and discussion followed by simulation exercise [17].

Lastly the team training has to be evaluated [18] on the basis of four main queries - reaction-did the trainees like the training and found it useful; knowledge and training - did it increase their understanding; behavior; results - were the important outcomes impacted? Cashman [19] reported the training has to be reinforced and it should be adequately acknowledged and rewarded.

Collaboration

A research study [20] has aptly described collaboration as follows: It is based on principles of team focused, varied health care professionals, with differing opinions come to together using their skills, attitudes and knowledge to provide patient centric care efficiently.

Process evaluation and audit

Programme evaluation is necessary for eliciting the cost effectiveness of alternative models to gain acceptability and sustenance. It helps to structure its organization and financing to effectively align it with a larger interdisciplinary system of care [21]. Some of the documented methods of evaluation are - Mixed method evaluation [22]; Process evaluation approach using programed documentation; participant observation and in-depth interviews [23,24].

Communication skills and use of IT

The communication skills among the functioning team members should have a strategy of support, advice learning, reflection, sharing the positive and negative aspects of lessons learned, accountability, learning from trial and error [22].

The team members can interact among each other to share information with a constructive feedback on work and performance via telephone/in person /e-mail/ internet and behave as a virtual multidisciplinary team [6]/tele- conferences/process mapping [22] if they are functioning at different locations.

A written treatment plan protocol helps to communicate effectively with the patient, their family members and the other professionals relevant to the treatment [13].

III. Outcome is explained in this review as- collaborative team work and productivity; improved quality of life.

Collaborative team work and productivity

Many chronic diseases leave their mark in the oral tissues. For that reason, oral healthcare services incorporated into the primary healthcare services will benefit the underserved population by providing them seamless services with both dental screening and physician monitoring[7] thus reducing waiting time for the patients [25] and even those with special needs [13]. A team which cooperates in an inter-professional manner not only enhances treatment outcome for the patient but also improves the staff necessities like job satisfaction, reduces workload [26,27] and helps retention of professional staff [27,28].

The outcome of collaborative team work enhances decision making with improved participation by the community, collaboration of community health workers, traditional medicine [2] and a larger proportion of the population getting care [29,30].

This point can be illustrated as an example by the dental authors' firsthand experience of working in a charitable trust dental clinic situated in a rural healthcare centre for low socioeconomic strata. The health centre has OPD services with a Physician; Homeopath; Pathology laboratory; visiting Gynecologist, visiting Pediatrician, visiting Ophthalmologist, and visiting Dentist. The visiting staff works on specific days in a week. Dental patients of low socio-economic strata benefited from screening for diabetes and blood pressure and physician consent before dental procedures like extraction and this reduced their travelling costs as everything was under the same roof. Some dental patients even benefitted from homeopathy treatment for example GERD due to the services rendered by a homeopath.

Improved quality of life for patients

Interdisciplinary teams spell better patient outcomes in the form of enhanced satisfaction, better acceptance of treatment and better treatment outcomes [31,32].

A study [33] shows better healthcare utilization by Type II diabetic patients who were treated by an inter-professional team.

Result and Discussion

Therefore, based on the knowledge gained from the literature review, we formulated a conceptual model, which can serve as a framework for handling an IDT on the ground (See table 1).

As the authors are a part of an interdisciplinary institution working under the same roof, they decided to formulate a pilot, based on the theoretical concept to assist patients who are tobacco smokers and have diabetes.

This treatment strategy was worked on by the dentist and the physician who specializes as a certified health coach, to reduce the burden of the underlying systemic issues along with the dental treatment (See appendix 1). Map of treatment strategy for tobacco smokers and appendix 2. Diet plan for tobacco smokers with diabetes).

Tobacco cessation programme among patients with Diabetes Mellitus	
Structure	
Core team	
Collateral team	
Physical Infrastructure (One/multiple location)	
Process	
Team work-Purpose	
Team work-Priority	
Team work-Tasks	
Team work-Communication and Decision making	
Role development (Tasks)	
Teambuilding/Networking	
Training	
Collaboration	
Process Audit/Evaluation	
Communication (IT)	
Outcome	
Collaborative team work and Productivity	
Improved QOL for patients	

Table 1: Conceptual design of IDT (Based on the literature review).

Conclusion

This conceptual study hopes to illuminate the benefits of inclusion of non-dental treatment modalities along with the dental treatment for better patient centered outcomes.

Appendix 1: Map of treatment strategy for tobacco smokers (Adapted from Dr Anita Merani tailored treatment plans for tobacco smokers).

Introduction: Smoking creates a physical as well as psychological dependency. It has a detrimental effect on the nutrition, especially if coupled with pre-diabetes/diabetes which increases the metabolic risk factors. Tobacco cessation requires continuous ongoing efforts to master- particularly for the smoker as well as hard work of the health consultant.

The treatment strategy is based on four main aspects: Psychological; Lifestyle changes; Exercise and Long-term adherence.

Psychological aspect

By the time the individual is addicted to nicotine, the act of smoking may be so intervened with the mind and with other activities such as: morning coffee; reading a newspaper; socializing etc.

Therefore, cognitive behavioral therapy is required to prevent situations that are conducive to smoking and they are as follows:

- Improve sleep.
- Preventing hunger and/or non-availability of food.
- Preventing erratic meal timings.
- Replace cigarette with substitute, like nicorex flavored chewing gum when the craving strikes.
- Providing counseling on health care and effects of smoking (Health belief model).
- Helping smokers gain confidence on being there for them on their quitting journey (especially when they face fear of withdrawal symptoms).
- Providing continuous support and mentoring.

Life style changes

Reduce stress

- Regular routine “me” time or time for self
- Listening to short motivational talks (daily on social media/ books/recordings)
- Affirmations

- Gratitude
- Meditations and deep breathing techniques - (the simplest of just equal inhalations and exhalations).

Nutrition

- Diet rich in antioxidants, fruits and vegetables, fiber, whole grain, millets etc.
- Herbal teas that also help with calorie restriction and weight loss.

Additional supplements given in different ready formulations

- Antioxidants: Help to regulate sleep
- *Gingko biloba*
- L Arginine
- Niacinamide
- Calcium pantothenate
- Elementary Zinc
- Coenzyme Q10
- Pycnogenol
- Vit B. Complex
- Resveratrol

Exercise is a prerequisite for any happy life style change intervention as it helps with behavioral changes due to advantages of neurotransmitter release.

- Starting at 15 minutes per day with simple movements to atleast 30 minutes daily preferably making it a life-long habit (atleast 150 mins/week).
- Combination of cardio and weight training.
- Pranayam - Breathing exercises (atleast 10 mins/day).
- When craving strikes plan strategies like taking a walk; do sit-ups or engaging in any activities that can momentarily take the mind off cigarettes.

Plans on long term adherence

Maintenance and evaluation of treatment effects.

After the first intervention:

- Follow-up - 3 - 4 times in the first month.
- Then 1 - 2 times in the second month.
- Then once a month in the 3rd - 6th month.
- Thereafter as and when required by the client.

Appendix 2: General diet plan for tobacco smokers with diabetes (Adapted from Dr Anita Merani tailored treatment plan).

*Words in parenthesis () are Indian translations.

- 7.15 am: 2 glasses lukewarm water with 2 tablespoons lime.
- 7.30 am: 1 cup light tea with -less milk; (stevia if desired).
- 9.15 am: Half a bowl mixed fruits, 3 tablespoons sprouts.
- 11.30 am: Simetri herbal tea - green tea with lemon, garcinia extract, ginger, peperine powder, 2 egg white omelette, 1 Green lentil (moong dal) pancake (chilla)/chickpeas flour (besan) pancake (chilla) with mixed vegetables/1 bowl beaten rice (poha) with mixed vegetables.
- 1 pm: 1 bowl salad, 1 six inch millet flat bread (bhakri) with stuffed with green vegetables- like coriander/fenugreek, 1 bowl Indian cooked vegetables (sabzii), 1 bowl lentil (dal), 1 glass light yogurt drink (Chaas) with mint
- 3 pm: 1 Tea with Stevia.
- 4 pm: Simetri Tea [Herbal Green tea with lemon, garcinia extract, ginger and piperine powder].
- 6 pm: 1 sachet Prototal Whey [protein whey + fibre drink] in 1 glass of water or/veg Smoothie- ½ small carrot, 1/4 bottle gourd, tomato, ginger, lime.
- 8.00 pm: Exercise.
- 8.45 pm: 1 scoop of Whey protein in one glass of water.
- 9.00 pm: 1 Bowl Veg soup- base of tomatoes/broccoli/little carrot any combination with pieces of green beans and any other vegetable of choice, I small bowl of papaya, ½ glass mint Buttermilk (Chaas)/1 small bowl yogurt, 1 wheat flat bread (roti), *1 bowl cooked vegetables or any protein source-choose from the 3: 1 bowl soya nuggets/3 eggs whites/100 gms tofu/or cottage cheese (paneer)

- *Consume more asparagus, broccoli, carrots, pumpkins, sprouts etc. Herbs like ginger; capsicum etc.

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