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Covid-19 Quarantine and Dental Care: Patterns for Change

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Abstract

Introduction: Significant time and money are spent on dental visits under normal conditions. The Covid-19 pandemic has placed a stop to these regimes. The consequences of this has been shown mainly in increased emergency care, however, little is known of the effect on the general population and how well oral care and the natural ability of teeth and the immune system have worked to preserve dental health. Materials Methods: Reference to reports in the media on oral health and dental visits are analyzed as are the dental literature for scientific foundations of treatment and pathology. Principal Results: Current reduction of visits to dental professionals by both adults and children provides a unique opportunity to study healing of teeth in a natural context. Conclusions: Research should be organized and directed to investigate the frequency of caries and natural healing in populations across socio-economic groups to determine potential changed in dental regimes of care and treatment.

Index terms— dental care, caries, restorations, oral health, genetics.

1 Introduction

The Covid-19 pandemic has changed many of the daily routines of the average person. One of these is the reduction in dental care. While dentists have reported more stress related dental problems during the pandemic, the CareQuest Institute for Oral Health found that some 6 million adults had lost dental insurance, which indicates a larger number of dependents also lost covered care. More than 1 in 10 Americans surveyed had avoided getting care due to the cost, lack of insurance or fear of exposure to Covid-19 or a combination of factors. (Tingley, 2021).

A press release by the FDI World Dental Federation dated March 18 th 2021, cited a number of dental professionals whose practice indicated an increase of dental emergencies as well as other basic dental pathologies. No scientific studies are available to support this assertion, but it does seem likely. Data collected by the AARP (Stepko, 2021) suggested that cavities and periodontal gum disease was up significantly. This was partly blamed on a change in diet to sugary foods and drink and to lax dental care related to job and life changes brought on by the quarantine. One published study in Germany (Al -Masri, et al., 2021) found a 45% increase in emergency needed care in 2020.

With this information in mind, and no specific study data of if there has been a over all increase in cavities within the known factors of change of diet or loss of regular care (dental cleanings, scaling, fluoride etc.), it will be of interest to see if general trends can be extracted from care data after treatment resumes to normal levels.

2 II.

3 Natural Response of the Tooth

There are a number of considerations that this information could enlighten health care professionals. It is known that under normal use teeth can repair themselves under both poor care and a range of diets. It is well established that arrested caries is a fairly common phenomenon ??Shafer, et al., 1969), the infected tooth attempts to wall off the attack and electron microscope images can show dentinal tubules filled with dead bacteria and the progress started by "pioneer bacteria" arrested at the meridian of proteolytic forms. While some absorption of bone can result from infection or trauma, the defensive capacity of the oral tissues seems to have a certain degree of success.

44 There has been little research on this point and there are concerns that the lack of scientific evidence looms
45 over dental procedures in general (Jabr, 2019). Some dentists argue that a lack of funding has stalled scientific
46 research (Dhar, 2016).

47 4 III.

48 5 Benefits and Deficits of Interventions

49 On the other hand, dental interventions by professionals requires the use of drills of different kinds, these generate
50 heat which is damaging to the tissue of the teeth, and techniques of sterilization are seldom perfect leaving some
51 microorganisms in situ. The use of a variety of materials to seal the tooth from the older Zinc Phosphate cement
52 to newer self-polymerizing acrylic resins and recent mixtures with UV polymerization, ceramic and composites,
53 seldom produce entirely closed joints with the enamel of the tooth and most amalgam also leaks introducing
54 bacteria ??Shafer, et al., 1969). One might say that modern restoration procedures are effective at removing
55 infected tissue and bacteria, but less so at creating barriers to infection, especially given their own degradation
56 times.

57 It is generally found that most dental restorations need to be replaced every 5 years (ADACSA, 2003; Kingston,
58 2013; ??raugo, et al., 2019). New methods and practitioner training can increase the life of the filling according
59 to research by ??enetti, et al., 2021. IV.

60 6 Genetic Variation in Immune Response and Tooth Resistance

61 Susceptibility to tooth decay depends also on genetics, for example by the spatial arrangement of hydroxyapatite
62 microcrystals in the enamel ??Ceve, et al., 1980). Genetic factors are complicated by a number of environmental
63 factors that are difficult to control, yet twin studies have helped elucidate these variations (Wang, et al., 2012).
64 While the ability of teeth to fight off infection and damage by bacteria of different species, there are obvious
65 means of this process that involve the immune system (Athanasiadou, et al, 2018). Deposition of secondary
66 dentin (sometimes called "adventitious" dentin, and dentinal sclerosis are responses of the tooth to irritation and
67 caries ??Shafer, et al., 1969). Success of such a response to fight off infection and repair the tooth on a population
68 level is unknown.

69 One factor here is the lack of comprehensive epidemiological studies of dental pathology and treatment
70 outcomes. Present analysis is often based on National Center for Health ??tatistics (1978;1979) from the
71 1970s (Institute of ??edicine, 1980). The 2011 Report of the Institute of Medicine of the National Academies
72 characterized the information available on efficacy and treatment as: "Concerns have been expressed about the
73 quality of care provided in alternative settings or by new types of professionals, but data on the quality of care
74 and longterm outcomes related to the provision of care by all types of oral health care professionals are almost
75 wholly lacking." (IM, Report, 2011, 9).

76 V.

77 7 Conclusion

78 A study of adults and children today after the end of regular dental regimes in the population at large in a country
79 would provide a substantial advance in our understanding of the process and could also identify genotypes that
80 provide greatest protection. Current conditions of Covid-19 quarantine and distance limits of contact have
81 produced a unique opportunity to study the efficacy of dental procedures, especially regarding restorations. The
82 outcome of such research might effect changes in practice that could be beneficial to dental science and practice
83 and cost to patients.

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