

## Manual Dexterity: An Important Tool for Dentists

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### Abstract

Dentistry is the branch of medicine which deals with the study of oral and maxillofacial knowledge, diagnosis of the respective area, identifying the disorders and the relative conditions of the oral cavity, prevention and treatment of the oral diseases and taking good care of the dentition and oral mucosa. So being a dentist is being a combination of different skills both psychologically and physically. It is a profession that demands spanning oral communication, keen attention to detail, graciousness to the patient, clear conception to solve the problems and most importantly excellent manual dexterity. If someone wants a topnotch footing in the dental profession, he or she must have these qualities at a top order. In this paper the author has described some easy and spontaneous way to build up a good control over the hand of a dentist to avoid any kind of mistreatment or accident during carrying out the dental procedure, as they need to work in a small confined area using very sharp and powerful instruments. In this consideration excellent manual dexterity is the basic element that a dentist need. By acknowledging these procedures, a dentist can become more skillful for the patients and also can have a good control over the nervous system. And this control is good for not only the profession it is also helpful for fighting some neurological disorders of the practitioners. Here we have found some simple day to day hobbies or practices that can give us the frequent opportunity to improve the manual dexterity of the dentists.

**Keywords:** Manual Dexterity; Dentists; Dentistry

### Introduction

Dentistry, also known as Dental and Oral Medicine, is a branch of medicine that consists of the study, diagnosis, prevention, and treatment of diseases, disorders, and conditions of the oral cavity, commonly in the dentition but also the oral mucosa and of adjacent and related structures and tissues, particularly in the maxillofacial (jaw and facial) area [1].

Although primarily associated with teeth among the general public, the field of dentistry or dental medicine is not limited to teeth but includes other aspects of the craniofacial complex including the temporomandibular joint and other supporting, muscular, lymphatic, nervous, vascular, and anatomical structures. We can see a huge variety of spaces are connected to the Oral and dental health. But in terms of both theoretical and applied dentistry it is important to understand the abnormality and the tenderness of the situation and in case of treating that, it is obvious to use the sharp eye and skilled hand. Otherwise it will be a total failure to perform the overall arrangement to treat a patient. Moreover, most of the structure is confined into a limited and concealed area of oral cavity. To achieve a successful treatment sequel the doctor primarily must have enough knowledge as well as the willful manual skill. To achieve an excellent manual skill, it is important to be expert in the manual dexterity.

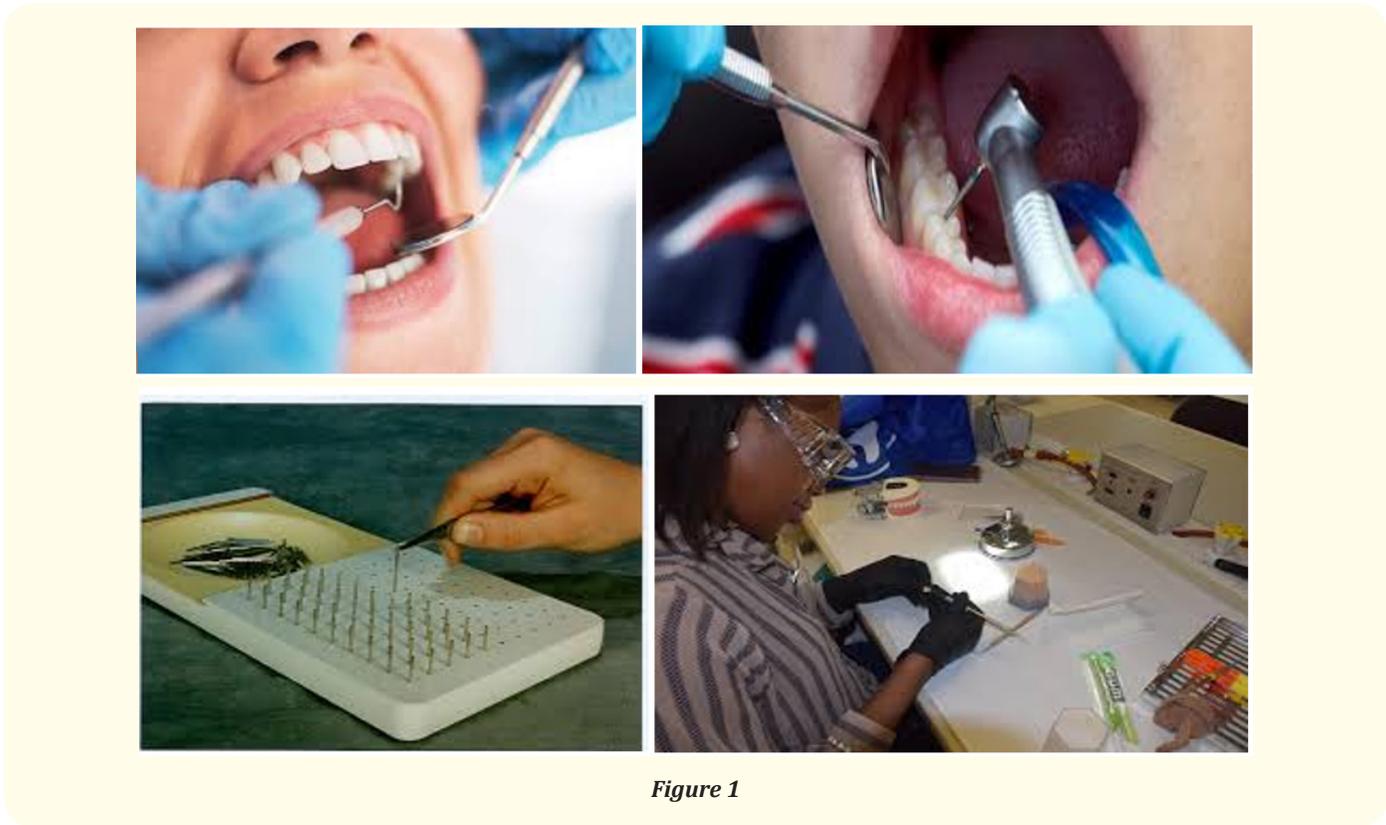


Figure 1

### Case Report

Manual dexterity is a vital measure of a surgeon. It is the ability to use both hands skillfully and a coordinated way to grasp and manipulate objects and demonstrate small precise movements. If someone wants to be a skilled dentist, he/ she must be able to work with precision on an extremely small scale. In addition to that a superior eye-hand coordination is significant to ensuring the safety of the patients and perfect treatment consequence. Therefore, it is the predominant factor to ensure the integrity of the profession. On the other hand, if someone finds working with his/ her hands in such a way is not enjoyable then he/she will be frustrated being a dentist.

Dentistry is a medical profession that requires fine motor skills [2], hand-eye coordination [3] and spatial perception [4]. Furthermore, perceptual learning is needed for indirect visualization through a mirror [5-7].

During the practice of developing dexterity there are three basic movements that need to be strengthened:

1. Thumb abduction or palmar Abduction: this is the thumb moving away from the plum.
2. The fingers are able to spread out and come together while they are held in an extended position.
3. The fingers able to assume a rounded position; partially extended and partially flexed.

So, to achieve a better level of manual dexterity we can practice some kink. For example [8]:

1. Drawing
2. Painting

3. Woodcarving
4. Creating 3-D artwork through jewelry-making, sculpting or ceramics
5. Soap carving
6. Sewing/needlepoint
7. Cross-stitching
8. Crocheting
9. Knitting
10. Learning to tie fishing knots
11. Learning a musical instrument that requires extensive hand -eye coordination; e.g. Piano, Violin.

There are some exercises that can help you in developing better manual dexterity and flexibility [9-11]. Those are illustrated below;

1. Grab a squeeze ball- Grab a soft ball and hold it in the palm. Squeeze the ball as hard as possible without causing hands pain. Hold this position for three to five seconds. Repeat this exercise 10 - 12 times for each of the hands. This exercise can be done two to three times weekly. But take a rest of two days approximately before the next session. This exercise will provide the ability to hold things without dropping them.



Figure 2

2. Make a fist- with each hand independently make a gentle fist and after that wrap the thumb across the fingers. Hold this position for up to one minute, then release and spread open all of the fingers as wide as possible. Repeat this exercise three to five times with each hand. This can help to increase the range of motion.



Figure 3

3. Get relief when exercise- warming up the hands before doing exercise can help alleviate discomfort. Which will subsequently have the potential to make the stretching and movement become easier. Treatments suggest include soaking them in warm water, wrapping them in a heated towel or using a heating pad for approximately five to ten minutes. To gain more deeper warming effect for the hands. One can rub some oil into his/her hands, put on a pair of rubbed gloves and soak them in warm water or can use a heated towel or heating pad. This is a great method to help the hands feel better, especially if someone regularly experiences pain or stiffness in his/her hands and fingers.



Figure 4

4. Lift the fingers- starting with the left hand, palm down on a table. Starting with thumb, gently lift each finger at a time slowly off the table. Hold each of the fingers one or two seconds and then lower them. Repeat with the right hand and then repeat eight to ten times for each hand. This finger lift exercise can help increase the range of motion of the hands as well as the finger flexibility.



Figure 5

5. Stretch the wrists- Many people, particularly women, have wrist pain during exercise, especially yoga and lifting heavy objects. Sometimes, they even feel this when lifting their children. The wrist-extending stretch can help support these tasks and decrease uncomfortableness. To complete this exercise, one person should extend his/her right arm in front of him/her with the palm facing toward the floor. After that he/she should bend the wrist, pointing the tips of his/her fingers toward the floor. With his/her left hand, gently bend the wrist toward him/her until he/she feels a mild to moderate stretch in his/her forearm (that means behind the wrist). Now he/ she have to hold this position for at least 15 to 30 seconds, after that switch to the left arm and then repeat two to four times.

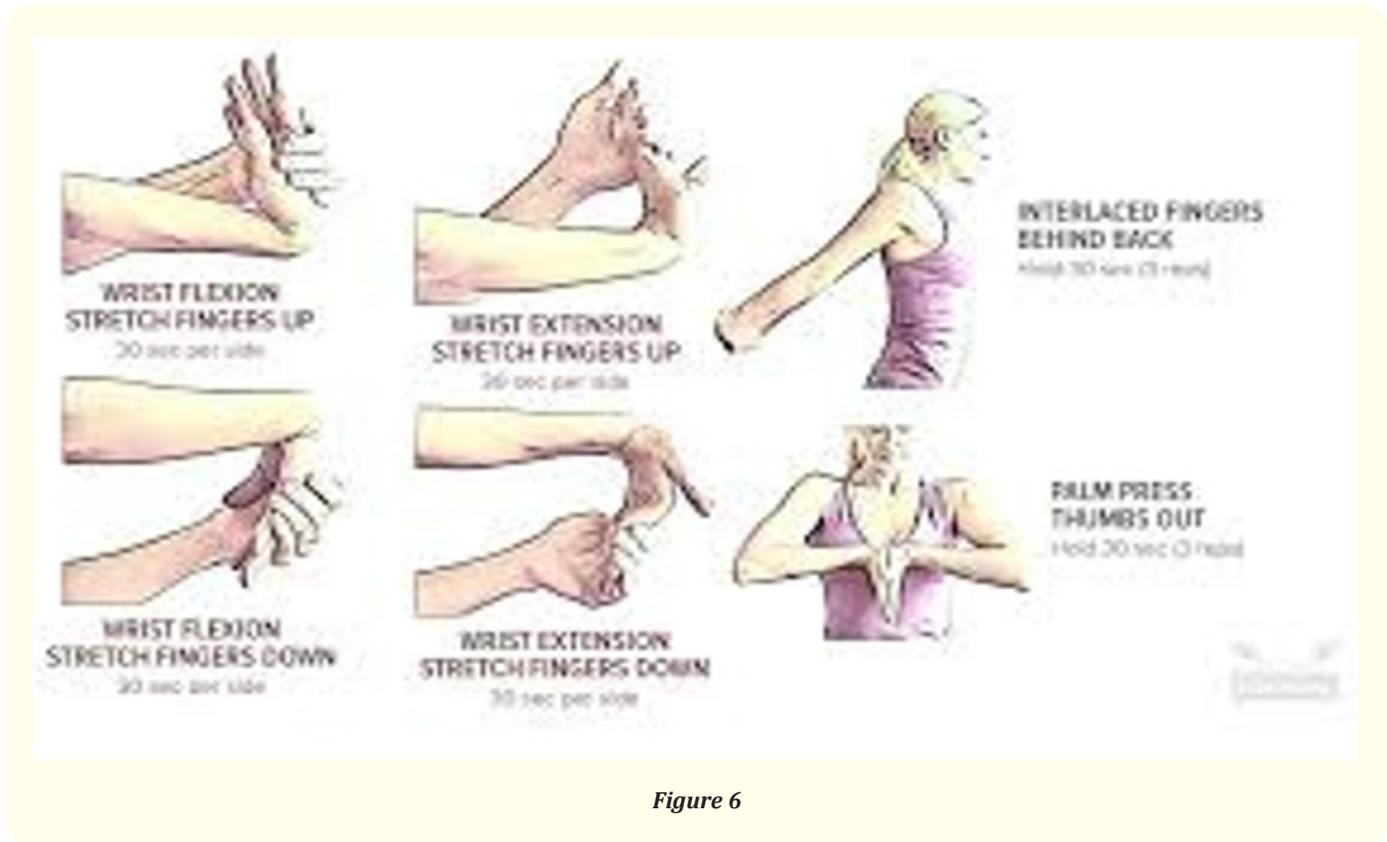


Figure 6

A prudent and skilled dentist would like to equip himself/herself with all the skills that are helpful for treating his patients perfectly. At the time of charting, scaling teeth, polishing or drafting chart notes, he/she is constantly and willingly hands-on. For this reason, dentists need a steady hand. We have already discussed some ways to achieve a better manual dexterity along with that we have some additional themes for this purpose:

1. Trying something new- along with working with dental mirror, probe, scalpel and other instruments one should try some fancy things to enjoy his/her free times. Hobbies like nail design, cake decorating, hena designing in the hands and jewelry making can help in developing better hand-eye coordination. These types of activities can also allow them to show off their special skills to others.



Figure 7

2. Write with style- it is a most ancient teaching to increase the hand skill. To write in different ways it needs flexibility of hands and fingers. Practicing calligraphy which is a form of art can give a unique touch into the life. This will increase the steadiness of hands as well.



Figure 8

- 3. Meditation- practicing meditation of passing some time in silence is important to improve any skill. It is effective to concentrate on hands and its activities to improve the control over the limbs.
- 4. Being digital- being digital is also helpful. Using computers, texting on the phone with others and playing video games can also help in getting good improvement.



Figure 9

- 5. Taking good food- intake of good food is important to keep balance of body and mind and keep the nerve and the muscles strong to work perfectly.
- 6. Fingertip Press- Place the fingertips of each hand together, keeping the palms open and fingers bent. It will look like you're grasping an invisible ball with both hands. Apply gentle pressure into the tips of the fingers, which extends and pushes the fingers slightly upward. Add even more pressure and the fingers will straighten. Try to apply pressure until the length of the fingers are pressing together, the palms not quite touching. Repeat this exercise several times a day for relief of tension and strain.



Figure 10

7. Making "Os"- The person should place his/her right hand in front and palm side up. Now he/she should touch the tip of his/her thumb to the index finger, making an "O." Then he/ she should release and touch the tip of the thumb to the middle finger, release, then the ring finger and finally, the pinkie finger. Repeat this sequence several times with the right hand and then repeat with the left hand, suggests Ohio State University.



Figure 11

8. Waving Bye-Bye- The practitioner should raise his/her right hand to shoulder height, palm facing outward. Extend the thumb to the side. Next, bend all the fingers toward the palm of the hand as if he/she is waving good-bye, or grasping a piece of paper only with the fingertips. Then he/she should open the fingers, pressing them gently together as he/she lifts them upward, and returning to the starting position. Holding the fingers in that position, bend the thumb inward, trying to place the tip of the thumb as close to the base of the pinkie finger as possible. Hold that position for several seconds and then extend the thumb outward again. Repeat this sequence on each hand five times.



Figure 12

- 9. Weight lifting- Very small level of heavy things/ weight should be lifted for some time will be helpful to increase the hand, wrist and finger muscle strength or use of spring grip dumb-bells are also helpful.



Figure 13

- 10. Playing with small things- playing with some miniature object or puppets can be helpful in practicing catching and holding small things precisely. Playing cards can also be a substitute. Spinning tops are useful.



Figure 14

- 11. Puzzles- Playing puzzles are helpful in manipulating small objects through turning, placing and flipping pieces. Along with that it also improves the concentration on the big picture.
- 12. Two- Handed Tasks- Any activity in which a person has to coordinate with his/ her both hands are a great tool. For example; rolling a ball of play dough into a long 'snake' and then cutting that with a plastic knife. This type of act helps in increasing the activity of both hands parallelly and simultaneously.

### Discussion

Here we have discussed some different methods of improving excellent manual dexterity. Manual dexterity is also known as fine motor skill. It is the synchronization of hands and fingers with the eyes. Not only for dentistry, rather, these fine motor skills are essential for performing everyday tasks. Most importantly, manual dexterity is an important feature of neurological health; hence any alteration of the manual dexterity is a significant symptom of neurological illness. Reciprocally, development in the dexterity is sometimes a preventive measure or a positive prognosis of diseases like Alzheimer's disease (AD), Parkinson's disease, dementia etc. So, we can easily deduce that dentists are lucky that they have a chance to practice and develop their dexterities for their own profession. It is a fruitful measure for enhancing the memory power as well.

For professional reasons alone - dentists ought to take good care of their hands and its skills. But they should also keep in mind that; if there is a sense of numbness or tingling in the hand, it should be evaluated by expert physicians immediately and if the weakness of someone's hands is not improved by different exercises then that person should see a hand specialist.

### Conclusion

Manual dexterity is the magic spell for becoming a skilled dentist. Effective and perfect combination of manual dexterity helps the practitioner to complete his woks in a very little time; in a very soothing manner in a very small area. It helps the dentist to achieve a successful treatment plan without any hinderance. Along with that it helps to gain the trust of the patient which is very important to get the accurate outcome of the dental procedure. Dentists should take care of this skill to avoid the stiffness of the finger during operating in different curvatures of the oral cavity, dropping instruments from hands and other manual inabilities during the dental procedures and holding pointed sharp knives and needles for the stitches. Because any malfunction or displacement of sharp instruments can cause serious injury to the patients and the respective practitioner may suffer from the arrows of the legal issues and finally it can cause losing or collapsing his/ her profession for good. Dental professionals very often suffer from different neurological problem in their hands and fingers. Practicing manual dexterity will be helpful to make their hands flexible and uninterrupted during working and it will facilitate in accomplishing the excellence in profession.

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