



## Water Flossers in Oral Hygiene - A Review

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### ABSTRACT

Maintaining oral hygiene is crucial for overall health, and water flossers, or oral irrigators, have gained popularity as effective tools for plaque removal and gum health promotion. Research indicates that water flossers can significantly reduce plaque and gingivitis, offering a user-friendly alternative for individuals who struggle with traditional methods. Despite their advantages, awareness among common people remains limited, highlighting the need for improved educational programs to integrate modern oral hygiene tools into the curriculum. Additionally, combining water flossers with traditional flossing techniques may yield optimal oral health outcomes.

**Keywords:** Water Flossers, Oral Hygiene, Plaque Removal, Traditional Flossing, Interdental Aids.

### INTRODUCTION

The significance of maintaining oral hygiene is well established, with various tools available to assist in the removal of plaque and cleaning between teeth.

Water flossers, also known as oral irrigators, are gaining recognition for their contributions to oral hygiene, especially when used alongside traditional brushing.

Water flossers can effectively diminish plaque and gingivitis, serving as a complementary method to conventional flossing. Water flossers can significantly decrease plaque levels in comparison to traditional rinsing methods. Water flossers are engineered to connect to a faucet, using pressurized water to dislodge food particles and promote gum health.<sup>1</sup>

They may also utilize antimicrobial solutions, which further assist in controlling plaque and supporting gum health. Over the past decade, water flossers, also referred to as oral irrigators or dental water jets, have emerged as a contemporary alternative to traditional flossing techniques.<sup>2</sup>

Various interdental aids aim to clean the spaces between teeth and eliminate plaque and debris. These methods, which include interdental brushing and flossing, are essential for preventing periodontitis and cavities. Traditional interdental care techniques encompass the use of dental floss, interdental brushes, interdental tape, electric flossers, and wooden toothpicks.<sup>3</sup>

They are specifically designed to enhance periodontal health by delivering a pressurized stream of water to the teeth and interdental areas, effectively removing supragingival and subgingival food particles, harmful bacteria, and plaque.<sup>4</sup>

This article reviews the advantages of water flossers, assesses awareness among common people, and compares their efficacy to other oral hygiene aids.<sup>5</sup>

### History and mechanism of action

Water flossers (WFs) use a pulsating stream of water to clean between teeth and along the gumline, providing an alternative to traditional flossing methods.

The concept of oral irrigation originated in the early 1960s, with Dr. Gerald Moyer and John Mattingly developing early versions of WFs, culminating in the launch of the first commercially available water flosser, Water Pik, in 1962. In 2001, the American Academy of Periodontology recognized the clinical benefits of water flossing, asserting that supragingival irrigation reduces gingival inflammation beyond what is achievable through tooth brushing alone.<sup>6</sup>

It operates through a combination of pressure and pulsation mechanisms, typically comprising a water reservoir and a hand-held nozzle. They can be categorized into five classes: traditional, power-driven, clinical grade, portable, and adaptive, based on their application. The effectiveness of WFs, particularly in managing periodontal disease, is attributed to their hydrokinetic activity, which includes an impact zone at the gingival margin and a flushing zone that reaches beneath the gum line, aiding in the removal of supragingival plaque and subgingival bacteria.<sup>7</sup>

They have also been shown to reduce inflammation by decreasing pro-inflammatory cytokines in gingival crevicular fluid, benefiting those with mild-to-moderate periodontitis and diabetes.<sup>8</sup>

Studies indicate that WFs effectively penetrate 90% of pockets with probing depths of 6 mm or less and can reach



up to 68% of deeper pockets, significantly reducing periodontal pathogens without harming soft tissues. The pulsating action of WFs facilitates qualitative changes in subgingival plaque, underscoring their technological advancement and crucial role in contemporary dental care practices.<sup>9</sup>

### Benefits of Water Flossers

Water flossers provide numerous advantages for maintaining oral hygiene, particularly in preventing periodontal diseases and promoting gum health. They serve as a highly effective alternative or complementary method to traditional flossing. Research demonstrates that water flossers can lead to significant reductions in gingivitis when used in conjunction with tooth brushing; for example, a meta-analysis revealed a standardized mean difference (SMD) of -0.72 over six months, indicating considerable improvements in gum health.<sup>10</sup>

Their ease of use and comfort make them an appealing choice for those who struggle with traditional flossing methods. However, while water flossers are undeniably beneficial, some studies indicate that they may not entirely replace traditional flossing, as individual preferences and specific dental needs can vary. Therefore, a combination of both water flossers and traditional flossing techniques may yield optimal results for enhancing oral health.<sup>11</sup>

These devices can access areas that traditional floss often misses, efficiently removing plaque and food particles from interdental spaces. Designed for user-friendliness, water flossers are particularly beneficial for individuals who may find traditional flossing techniques challenging. They can be utilized with a variety of solutions, further enhancing their cleaning effectiveness. The pulsating jets of water not only dislodge debris and plaque from between teeth and along the gum line but also stimulate gum tissue, thereby promoting blood circulation and overall gum health.<sup>12</sup>

Additionally, water flossers prove especially advantageous for individuals with braces, dental implants, or other dental appliances, as they can easily navigate hard-to-reach areas without posing a risk to sensitive tissues. Regular use of water flossers is associated with improved gum health, which may contribute to a reduced risk of developing periodontal disease. These devices can access areas that traditional floss often misses, efficiently removing plaque and food particles from interdental spaces. Designed for user-friendliness, water flossers are particularly beneficial for individuals who may find traditional flossing techniques challenging. They can be utilized with a variety of solutions, further enhancing their cleaning effectiveness. The pulsating jets of water not only dislodge debris and plaque from between teeth and along the gum line but also stimulate gum tissue, thereby promoting blood circulation and overall gum health.<sup>13</sup>

### Assessment of Awareness Among Dental Students

The limited awareness of water flossers indicates a need for improved educational programs that integrate modern oral hygiene tools into the curriculum. Evidence supports the efficacy of water flossers in reducing plaque and gingivitis, emphasizing the importance of educating students about their advantages (Lyle).<sup>14</sup>

In another survey, dental students showed a strong preference for traditional methods like toothbrushes and dental floss, with little acknowledgment of water flossers (Singh & Pottapinjara).<sup>15</sup>

A study revealed that 80% of dental students had a fair to poor understanding of evidence-based practices, which likely includes specific tools such as water flossers (Khami et al).<sup>16</sup>

In Dania Othman Alnahdi's study involving students aged 18 to 29 years, only 13.6% reported using water flossers.<sup>17</sup>

Additionally, 54.7% stated that they were aware of water flossers, having learned about them from various sources, including social media and dental professionals. In Swathi Ramananda's study, 36.7% of students reported flossing, with 20.9% indicating that they began flossing after enrolling in dental college.<sup>18</sup>

### Efficacy of Water Flossers When Compared to Other Aids

Numerous studies have highlighted the efficacy of water flossers (WFs) in comparison to various traditional interdental care methods.

In comparison to interdental brushes (IDBs), WFs have been found to be significantly more effective in reducing bleeding on probing across various areas of the mouth. Although direct comparisons with dental tape and electric flossers are limited, both WFs and dental tape are recognized for their efficacy in interdental plaque removal, with patient preferences often dictating the choice of method.<sup>19</sup>

Research indicates that WFs can outperform traditional dental floss in reducing plaque and gingival inflammation, with a study showing that the combination of WFs and tooth brushing resulted in greater reductions in gingival index, plaque index, and bleeding on probing scores compared to those using only traditional floss.<sup>20</sup>

While approximately 30% of adults use interdental aids, with dental floss being the most preferred option, WFs are gaining recognition for their effectiveness, especially among individuals with limited manual dexterity, fixed prostheses, or those undergoing orthodontic treatment.<sup>21</sup>

Furthermore, WFs can be enhanced by integrating medicaments such as antimicrobial agents, improving their plaque control and gingival health benefits.<sup>22</sup>

Notably, studies also emphasize the complementary benefits of combining WFs with traditional flossing methods to achieve more thorough interdental cleaning. Additionally, WFs have proven to be beneficial in the



management of peri-implant diseases, showing superior effectiveness in cleaning around dental implants compared to traditional flossing.<sup>23</sup>

Collectively, these findings show the potential of water flossers as a vital component of comprehensive oral hygiene regimens, promoting better oral health outcomes across diverse populations.<sup>25</sup>

## CONCLUSION

Water flossers represent a significant advancement in oral hygiene tools, offering unique benefits that enhance plaque removal and improve gum health. While awareness among dental students varies, there is a clear opportunity for educational enhancement regarding their use. Further research is warranted to explore long-term benefits and establish standardized guidelines for integrating water flossers into dental practice.

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