



# Text Neck Syndrome: A Growing Health Concern

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## ABSTRACT

In recent decades, a breakthrough in digital technology has multiplied smartphone use for many purposes like work, socialization, and entertainment. People may use smartphones constantly anytime and anywhere while standing or sitting. This style is associated with the evolution of a new medical syndrome called text neck syndrome. Many studies suggest a correlation between this syndrome and prolonged use of handheld media devices. This article will discuss text neck syndrome, its manifestations, and methods to treat and prevent the progression of the disease.

**Keywords:** Smartphone, syndrome, text neck.

## ABSTRAK

Dalam beberapa dekade terakhir, inovasi teknologi digital telah melipatgandakan penggunaan ponsel pintar untuk berbagai tujuan seperti pekerjaan, sosialisasi, serta hiburan. Masyarakat cenderung menggunakannya kapan saja dan di mana saja, saat berdiri ataupun duduk. Gaya hidup seperti ini berkaitan dengan evolusi sindrom medis baru yang disebut sindrom *text neck*. Penelitian menunjukkan korelasi antara sindrom ini dan penggunaan perangkat media genggam jangka lama. Artikel ini membahas sindrom *text neck*, manifestasinya, serta cara mengobati dan mencegah perkembangan penyakit ini. **Angelina Febrina. *Text Neck Syndrome: Masalah Kesehatan yang Mengemuka.***

**Kata kunci:** Ponsel pintar, sindrom, *text neck*.



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## INTRODUCTION

Smartphone is a portable computer device that combines mobile phone features like make calls or send text messages and computing functions such as browsing the internet, play games, video chat, and many more. This modern technology is readily accessible for anyone, making smartphone much more convenient. In 2016 there were only 3,668 billion smartphone users, around 49% of that year's global population. The number has boomed in 2022 to 6,648 billion smartphone users or around 83% world population.<sup>1</sup> According to Statista, Indonesia is the fourth-largest smartphone market worldwide after China, India, and the United States. Smartphone users in Indonesia were around 44.44% population in 2017 and increased up to 67% in 2020. This number is estimated to reach 82% by 2026.<sup>2</sup> In this modern era, smartphones can be used by various age groups; 79% population between the ages of

18-44 have their cell phones with them almost all the time, with only 2 hours of their working day spent without their cellphone.<sup>3</sup> Even preschool children are exposed to internet-friendly environments that surely catch their attention. An American survey stated that the percentage of children aged 0-8 years of using a mobile device increased from 38% in 2011 to 72% in 2013. Focusing on 2-years-old children, the increment was even higher, from 10% in 2011 to 38% in 2013.<sup>4</sup> This situation becomes a concern because many health problems may arise from long-term smartphones use. Text neck syndrome is the term to describe pain or soreness around the neck and shoulders due to looking down at the smartphones, tablets, or other wireless devices too frequently or too long.<sup>3</sup>

## DEFINITION

The term "Text neck" was first pioneered by Dr. Dean L. Fishman, an American chiropractor,

who described it as a repetitive stress injury or an overuse syndrome when a person had his/her head flexed forward and was bent down looking at smartphones or other electronic devices for a long time.<sup>3,5</sup> Maintaining this poor position at most time may eventually cause the flattening of the normal curvature of the cervical spine and stretch the neck musculatures leading to chronic neck pain, upper back muscle tightness and spasms, shoulder pain, and headache.<sup>5,6</sup>

A full-grown head in neutral position is normally weighed about 10-12 pounds. At this position, the gravitational moment is considered the lowest and associated with the least complain of neck discomfort.<sup>3,7</sup> Forces on the neck increased linearly with the increment of the angle of neck flexion. It is doubled when the head tilts forward at 15° to roughly 27 pounds; reaching 40 pounds if the neck is flexed to 30°, 49 pounds at 45°, and

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more than fivefold effect at 60 pounds at 60° (Figure).<sup>3</sup> Study in Korea compared alterations of cervical spine posture in young adults with and without neck pain during smartphone use and discovered that young adults with neck pain exhibited greater neck flexion angle when using smartphone than users in the control group.<sup>6</sup> Another study collected data on neck flexion in college students during 8 hours of typical smartphone use using wearable motion sensors and discovered that they tended to spend more time with neck flexion exceeding 30° during smartphone use than during other activities.<sup>7</sup> In this current situation, mobile technology is within reach and people tend to spend more time on their smartphones or mobile devices and may end up with prolonged neck flexion causing text neck syndrome. This is a growing health concern and may influence mostly young generation.<sup>5</sup>

**PREVALENCE**

Various studies had been conducted to assess the prevalence of text neck syndrome and most were involving the young adult population, the major population with the greatness attachment to smartphones. Outcomes of a study in 2021 among 283 college students in India showed 76.6% of total respondents reported text neck syndrome.<sup>8</sup> Ayhuallem, *et al*, conducted a study to assess the prevalence of neck pain among smartphone user students in Ethiopia for a year and discovered that this particular symptom was complained by 47.4% users.<sup>9</sup> The finding of this study is actually lower than studies conducted in China (72.9%), Saudi Arabia (71.2%), Brazil (66.7%), Singapore (74%), and Taiwan (52%).<sup>9</sup> In our country, a study by

Susilowati, *et al*, among Universitas Indonesia community during work-from-home program due to the COVID-19 pandemic indicated that 70.5% of respondents complained musculoskeletal discomforts, especially in the neck (86.4%), lower back (75.9%), and shoulders (76.2%).<sup>10</sup> These studies showed high prevalence of text neck syndrome and may grow even higher with the significant increment of smartphone users.

**CLINICAL FEATURES**

A prolonged and repetitive neck flexion may severely harm the cervical structures. Researchers have observed 10-minute static neck flexion can result in mechanical and neuromuscular behavior changes of the cervical spine, leading to decreased strength of cervical structures.<sup>11</sup> Neck flexion indicates the forward pull of the weight of the head and put excessive load on the vertebrae of the lower neck, causing strain on the posterior neck musculature and commonly produce neck pain. This poor posture causes the upper back muscles to constantly counterbalance the pull of gravity on the forward head, hence producing upper back pain. Meanwhile, this position is often accompanied by forward shoulders and rounded upper back, which eventually cause shoulder pain.<sup>3,11,12</sup> Chronic pain in the neck and shoulders can be referred to the head, causing headache, especially tension-type.<sup>13</sup> Recent study found that smartphone users between 38-48 year-old are the most affected group. Also, it stated that the severity of neck pain is increasing gradually when the duration of the smartphone use increases, spending for more than 5 hours has the highest effect on neck pain.<sup>13</sup> A study focused on neck pain during

smartphone use in Korea indicated that individuals complaining with mild neck pain adopted a greater neck flexion posture than individuals without neck pain while using smartphones.<sup>6</sup> This finding, together with the studies mentioned earlier, emphasized on the awareness of maintaining a correct neck posture.

Aside from the musculoskeletal manifestations, the previous study also mentioned eye involvement among smartphone users. Texting with neck flexion can cause eye strain and nearsightedness.<sup>14</sup> A reduced blink rate during continuous smartphone use causes the evaporation of tear film to be faster and may potentially produce dry eye disease.<sup>4,14</sup>

Text neck syndrome manifested not only physically, but also psychologically. Commonly experienced by young participants (82%), parents usually noticed changes in behavior and social interactions. Complains like easily irritated, alienated, hostile, and aggressive behavior, decrements in attention and focus, low school grade, communication skills and sleep disturbance are frequently reported.<sup>4,14</sup> Previous study has shown that about 92% of children started to use a mobile media device before the age of 1 year-old, and at the age of 2 years, most children use devices on daily basis. Parents often used smartphones as a distraction or as means to manage children's behavior, to keep them calm in public places (65%), while doing house chores (70%), and/or at around bedtime (29%) to put their children to sleep.<sup>15</sup> This daily routine will distract parents-children's face-to-face interactions and resulting in a negative impact on cognitive, learning, and emotional development.<sup>4</sup>

Smartphones with 21st century features generate an extremely low-frequency electromagnetic field. Electromagnetic radiation is also a risk and may cause many symptoms, such as dizziness, headache, tingling in the hands, ringing in the ears, eye pain, electro-sensitivity, sleep disturbance, low immunity, ADHD, and autism.<sup>14</sup> Attention should be focused on the radiation effects on children as the absorption rate is much greater than that on adults.<sup>14</sup>

**TREATMENT AND PREVENTION**

Treatment for text neck syndrome should aim

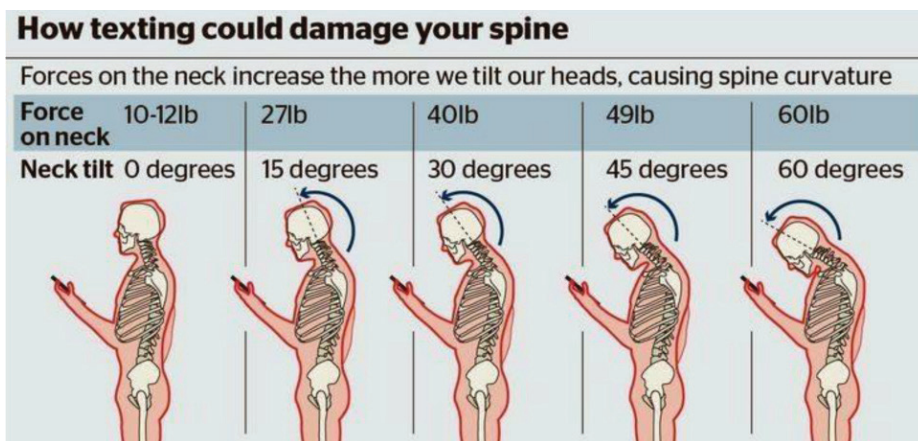


Figure. Changes in neck forces with the increment of flexion angle.<sup>3</sup>



at the specific problems and be personalized for each patient individually based on the treatment responses. Generally, it can be done in two major ways, conservative management, and surgery. Text neck syndrome is rarely categorized as a severe case that needs surgical interventions, unless there are progressive neurologic deficits or intractable pain and disability unresponsive to conservative management. Though text neck syndrome is mostly mild-moderate cases, if left untreated, symptoms may worsen over time and cause great length of physical health problems such as early arthritis, degenerative disc diseases, overuse syndrome, or permanent damages.<sup>3,5,11</sup> Maintaining a correct position and avoiding prolonged texting are keys in the management and further progression of text neck syndrome.

Though prevention is the key, the most acute cases symptoms can be relieved by techniques mentioned below:<sup>3,7,12,13</sup>

1. Correct posture is essential. Studies recommend correct texting techniques by raising the smartphone closer to the eye level with a straight back while sitting or standing. When sitting, backrest is proven to reduce neck flexion and thus alleviate the load on the neck muscles. Also, it is necessary to make sure that both arms and hand are well supported by anything like armrest, table, or other supporting arm techniques.
2. Avoid prolonged static posture. Warm up neck muscles every 30-40 minutes while using your smartphones by doing exercises like rotating your head for at least 10 times.
3. Muscles stretches such as side neck, levator scapulae, front neck, etc, and hold them for at least 10 seconds.
4. Chin and scapula retraction for 20-30

- seconds to strengthen the muscles of the neck and head stabilizing muscles and to unload neck pain and postural instability.
5. Rest is important. It allows the possibility of spontaneous healing of muscles and tendons.
6. Applying ice or cold pack as an anti-inflammatory to reduce swelling and pain. After a couple of days, ice or heat pack can be applied on an alternating basis. Applying continuous heat can cause increased swelling.
7. Massage can soothe muscle tension and spasm, hence reducing pain.
8. Pain reliever medication may reduce inflammation and hinder pain signals from reaching the brain.
9. Talk more, text less.

Conservative management is still the first treatment option for chronic cases. Physical therapy is mostly included in the treatment program to improve the neck strength and flexibility. To counteract the strain caused by text neck syndrome, exercises like cervical retraction, cervical extension, and cervical stabilization can be done daily to ease pain and to increase the neck flexibility.<sup>16</sup> Steroid injection can reduce inflammation of the nerves or nearby tissues caused by disc herniation. It can temporarily help to ease the pain and enable the patient to return to normal activities and/or make progress with the physical therapy program.<sup>3</sup> Manual manipulation by a health professional can improve the range of motion and reduce pain. Text neck symptoms may also be relieved by acupuncture. It is usually well-tolerated and is generally considered safe.<sup>3</sup>

A study involving more than 250 families in the US assessed the influence of screen exposure and showed that children who were exposed

to screens as early as 6 months old exhibited a lower cognitive and language development at 14 months of age.<sup>17</sup> Recent study of 296 preschoolers were conducted in Germany also revealed the same result that high screen times in children (>1 h/day) were significantly associated with lower percentile ranks in cognition, language, and socio-emotional skills.<sup>18</sup> Due to the escalating number of smartphone users among preschool children, many health societies, such as the American Academy of Pediatrics, Italian Pediatric Society, and also the Australian Department of Health, strongly suggest limiting media device exposure in childhood. They strictly recommend no screen time or media devices use (smartphone, TV, DVDs, computer, or other electronic games) in children under 2 years old, during mealtime, and at least an hour before bedtime. Also, they suggest to limit media exposure in children aged 2-5 years old to no more than an hour a day and less than 2 hours a day for children aged 5-8 years old. Parents or caregivers are obliged to present during screen time to promote children's learning and interactions.<sup>4,19</sup>

## CONCLUSION

Smartphones users are growing from time to time. This situation creates a health concern when users spend hours on their phones and bend their head down to a certain angle that may overburden the neck and upper back muscles. Neck flexion should be less than 15° while using smartphones or media devices to minimize cervical spine strain. Practicing better posture and frequent breaks with small stretches or exercises can be the simple solutions. Parents and caregivers should be good role models for the children and proactive interaction is the best approach.

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