

Digital Exclusion: New research reveals how touchscreen future leaves 5.6 million elderly behind in the UK



In the last decade there has been an increase in the number of seniors who use touchscreen devices and technology¹, as a way to help cover their social needs.² However, in 2019, there were still 2.8 million people aged 75+, 1.1 million people aged 65-74; and 0.5 million people aged 55-64 in the UK who did not use the internet²⁰. Only 9% of people aged 65-74 made video calls regularly in 2018, with only 7% of people older than 75 doing the same²¹. Over 79% of all digital exclusion was among those aged 65 and over²¹.

Two-fifths (39%) of people aged 50 plus in England say they are using the internet more since the coronavirus outbreak. However, usage has increased most among groups already using the internet regularly and so far, there is little evidence that the pandemic has led to significant numbers of those previously digitally excluded getting online²⁰.

Therefore this suggests that there are still barriers in place that prevent people from accessing technology. It is often believed that the use of touchscreens is one way to reduce this barrier to entry. Touchscreens are considered as natural and easy to use, and therefore they are often used in products designed to assist the elderly¹. So why have we at No Isolation decided not to include a touchscreen in Komp?

The reason that Komp does not have a touchscreen is due to the particular way touchscreens work and are used; which could mean that thousands of seniors still aren't able to use them.



How touchscreens work

It is a common misconception that when a touchscreen doesn't respond to your finger, it is because your finger isn't warm enough. But in fact, touchscreens aren't detecting the heat of your finger, but its ability to conduct electricity. Capacitive touchscreens (almost all screens used by the average user³) generate a small electrical field and it is the disturbance in the electrical field, when your finger conducts the electricity from it, that is sensed by the screen⁴.

Certain characteristics of the fingers can reduce the electrical conductivity of the skin, such as calluses or dry skin; as the thick skin of calluses impedes electricity flow⁴, and dry skin lacks the moisture needed for the electricity to travel.

Touchscreens and elderly hands

Skin

When we age we naturally lose moisture from our skin, as the skin loses some of its 'lipid' content - essentially fats in the skin - that are essential in forming a barrier to hold moisture in⁵. It has been found that we can lose as much as 65% of our skin lipid content over time⁶. Likewise, as we age, we lose sweat glands⁵ that can provide vital external moisture when interacting with touchscreens. Dry skin is associated with other skin conditions in the elderly that cause abnormal thickening of the skin¹⁰.

This issue is common in the elderly: it has been found that, in multiple studies, that 60% of seniors have dry skin^{12,13,14}. One study even showed that 99.1% of care home residents develop dry skin¹². It is therefore not surprising that it has been observed in studies that elderly people with dry or wrinkled fingertips have significant difficulty with getting tablets to recognise their touch¹¹. 11.8 million people are 65 years or older¹⁵, therefore, being conservative and applying the 60% statistic, this would suggest that 7.08 million people would have dry skin in the UK alone. One study has reported that dry skin meant that touchscreens didn't recognise the touch of 25% of the participants, with another study reporting the same with 28% of the participants^{28,29}. Therefore it is possible that up to 1.98 million people with dry skin find touchscreens difficult to use as a result.



Function

Styluses are commonly proposed to address the barrier of dry skin. However, in addition to having dry skin, seniors also come across other barriers to using touchscreens. For example, the elderly can experience other medical conditions that affect their hands. This means that they can find using styluses awkward or difficult to use⁵¹.

For instance, a review of 52 studies found that 26% of participants had physical impairments that prevented them from using technology²². These conditions included multiple sclerosis, Parkinson's disease and arthritis. This would translate to the equivalent of 3.07 million people 65 years and older in the UK. Another study found a similar proportion of participants found they didn't have the dexterity required to access current touchscreen technology²⁵.

Plus, reduced motor skills and physical coordination means that seniors find it difficult to use multi-touch interactions to rotate and zoom content; gestures that cannot be simulated by a stylus. These gestures require users to exert continued contact with the screen with multiple fingers¹⁶, which can be difficult for people with reduced muscle function in their hands or arms¹⁸. They can also have limited range of movement, muscular tremor or joint rigidity¹⁷. Computer mice and touchpads are problematic for older adults; as precise movements are needed for navigation²⁷. Age UK has found that those with mobility problems are 1.44 times less likely to use technology and the internet than those without these conditions²¹.

Touchscreens and cognitive demand

Likewise, seniors with cognitive impairments can have difficulties with visuospatial and executive function, and touch accuracy¹⁹, which can make it difficult for them to sequence the necessary actions to interact with touchscreens. Likewise, it is more difficult for the elderly to learn to use new technologies like touchscreens when cognitive difficulties affect their memory and attention¹⁷.

Studies have found that up to 45% of seniors couldn't use an iPad due to cognitive limitations²⁴. Likewise, it has also been found that people with memory impairment are only half as likely to use the internet than those without any impairments²¹. A literature



review has shown that less than 50% of seniors with dementia manage to use technology independently²⁵. The international prevalence of subjective cognitive decline in 2020 has been estimated as 25%²⁶. This means that, in the UK, 2.95 million people over 65¹⁵ would have subjective cognitive decline.

Komp

It is not surprising that with these additional health concerns that the elderly experience, they have difficulty in engaging with technology independently. We've found that 1.98, 3.07, and 2.95 million people may have difficulties in using touchscreen technology due to dry skin, physical impairments and subjective cognitive decline (SCD) respectively. 30-40% of these people will have both physical impairments and SCD³⁰; accounting for this, we believe that in total 5.6 million unique people over the age of 65 in the UK find touchscreens difficult to use due to health barriers.

There is evidence that more than 50%¹⁸ of the issues that seniors come across when using technology are usability issues that can be solved via better design. Poor design results in low technology up-take, with as much as 40% of technology installed in the home never being used²⁰.

It has been found that seniors are less likely to use new technologies if they feel that by doing so they will show their lack of tech-savviness, or that they will get frustrated and confused¹⁷. This means that despite the fact that technology can cover some of the need for social contact, only a small percentage are using existing solutions.

Therefore we have designed Komp in a way to address these barriers to enable the vulnerable in our society. Enabling someone to connect may mean that Komp is simpler than other products, but this has proven time and again to provide greater value to individuals and families.

As the son of a Komp user recently said:



Sometimes brilliance is in the simplicity with which complex problems are solved.





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