TELEMEDICINE
The Emergence of Technology in Healthcare Practices and the Resulting Implications on Patient Safety and Healthcare Efficiency

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Technological advances in today’s society are as rapid as they have ever been. New and improved technologies seem to be taking over different sectors of our lives with every passing day. Although telemedicine is not a new concept by any means, according to Zundel (1996) the first reference came in the early 1900’s, the technology that is present today has elevated it beyond what could have ever been imagined.

Telemedicine is the delivery of healthcare and sharing of information relevant to healthcare across distances. It encompasses all facets of healthcare from evaluation and diagnosis to treatment and prevention. The emergence of technologies such as Skype have led to doctor’s being able to communicate “face-to-face” with patients half way around the world. It has already been applied to several clinical aspects by providing care to prison populations, populations in remote locations, and post-surgical monitoring populations. It
seems as though this relatively new sector of healthcare has been able to increase the efficiency and economy within which healthcare practitioners are capable of working, but the question is; has it come at a cost to patient safety?

The main concern with telemedicine is whether the same level of care can be provided without the physical interaction that meeting with a healthcare practitioner in person provides. In a recent study done by Berkhof et al. (2015), it was found that symptoms in patients with chronic obstructive pulmonary disease had a significantly (P = 0.03) greater decrease in symptoms if they were an in-person patient rather than a telemedicine patient. These results suggest that physical interaction with doctors should still be considered the primary method in dealing with patients with chronic obstructive pulmonary disease.

However, the results found by Berkhof et al. (2015) are not consistent with many other studies regarding patient safety and telemedicine. Morland et al. (2015) found that post-traumatic stress disorder symptoms in both civilian women and male veterans decreased (mean = -20.5, 95% CI -29.6 to -11.4) independently of whether the patients were treated via in-person correspondence with a healthcare practitioner or videoconferencing with a healthcare practitioner (P < 0.05). Similarly, in a study conducted by Duncan et al. (2010) concerning neurological patients, it was determined that videolink patient care had rates of safety and effectiveness that were not significantly (P > 0.05) different than those found for in-person patient care.

The results of these studies suggest that although telemedicine might reduce patient safety with regards to certain extreme illnesses and diseases, it is, for the most part, a safe and reliable technique in dealing with the majority of diseases and illnesses. In addition, the fact that there are not enough doctors to physically reach patients in remote areas indicates that telemedicine will greatly increase patient safety in remote areas by simply increasing the rate at which patients may be seen, assessed, and treated (Craig, 2005).

A local health institute in Kingston, **Kingston Orthopedic Pain Institute** (KOPI), has recently implemented a telemedicine sector into their services. The main
application of this sector is in helping deal with the health issues of the prison populations in Kingston. The prison population is a population that often lacks sufficient healthcare attention. This application of telemedicine allows patient care to extend to an area that was previously isolated from most health care practices, which is another major benefit that telemedicine offers over in-person healthcare.

Although there may be a few applications in which telemedicine may have adverse effects on patient safety, the reduction in cost and time spent makes it an industry worth developing. A study (Chu et al., 2015) that compared urological care in a remote area before and after the implementation of a urology telemedicine clinic found that, on average, patients travelled 445 km less, saved 290 minutes in travel time, and saved $193 after the implementation of the telemedicine clinic. This increase in economy and efficiency that telemedicine offers is consistent across all healthcare sectors in which it is applied.

Telemedicine is far from a finished product as technological advances will only continue to strengthen its ability to contribute to the healthcare sector. At this point in time it is mostly constrained to extreme circumstances, such as providing care in remote areas, in order to prevent a possible decline in patient safety, as well as possible liability issues. The fact that telemedicine is successfully used with no clinical drawbacks on patient safety in many scenarios indicates that it is a valid technique that can be used to treat every day illnesses and disease. An improvement in the ability to deal with certain severe illnesses coupled with an inevitable improvement in technology makes it seem likely there will be an increase in the role of telemedicine beyond just extreme circumstances.

References


