Anthropometric Evaluation of wheelchairs used by the physically disabled in Algeria

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Introduction: Various studies have been conducted to collect anthropometric data of wheelchair users (Das, & Kozey, 1999; Jarosz, 1996; Laubach, et al. 1981; and Paquet, & Feathers, 2004; Lucero-Duarte; et al. 2012; Ashiedu, and Igboanugo, 2013) to use in the design of mobile chairs and other equipment intended for use by disabled people. In addition, many other studies were carried out to collect anthropometric data to come up with standards that should be used to ensure accessibility for people who use wheeled mobility devices like manual and powered wheelchairs and scooters (Steinfeld, et al. 2004; Steinfeld, et al. 2005 and Steinfeld, et al. 2010). However, studies carried out to evaluate mobility devices (including the wheelchairs) are very rare.

Practice innovation: This study will ergonomically evaluate the design of wheelchairs locally designed, and identify how they fit the expected users namely the paraplegic and hemiplegic disabled individuals.

Sources of information: This study is based on data collected from two samples. The disabled sample that consisted of 170 individuals living with lower limb disabilities (paraplegic and hemiplegic male individuals) with a mean age of 38 years. The following body dimensions were taken: sitting shoulder height, shoulder breadth, hip breadth, buttock-popliteal length, and popliteal height. Measurements were taken while subjects were sitting in their wheelchairs. Before measurements were taken, subjects were instructed to sit as normally in their wheelchairs as possible according to Jarosz (1996). To collect anthropometric data, a standard Harpenden anthropometer that was graduated in millimeters, was used. Body dimensions, landmarks and the measurement of each body dimension procedures were defined after Frisancho (1993) and Pheasant (1997).

The wheelchair sample consisted of three basic manual made-in-Algeria wheelchairs by the national office of equipment, and accessories for disabled people (Wheelchair Tigzirt 2, Wheelchair Wardrobe, and Wheelchair Transfer). The following wheelchair measurements were taken: back height, back width, seat width, seat depth, and seat height. Similarly, the standard Harpenden anthropometer was used.

Findings: Results showed that three actual wheelchairs do not fit their users. If one measurement or more are fitting the user, the other dimensions are not. If anthropometric surveys are not carried out, not only on disabled Algerians, but the other population segments, how can you fit the equipment to the users?

Discussion: The lack of anthropometric studies in Algeria, like other developing countries, is evident. In the absence of anthropometric studies, design will be haphazard, and often cannot fit machinery, equipment and tools needed by the user. For this, it is possible that users of wheelchairs will not enjoy using them. This fact has been mentioned by many other researchers. Ashiedu, and Igboanugo, (2013) pointed out that the anthropometric data of Nigerian paraplegics were not considered in the design of the existing wheelchairs and wheeled boards.

References:


