Design and Construction of a Low Cost Portable Cardiopulmonary Resuscitation and Ventilator Device

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***Abstract*—** Recently, after the global spread of the new coronavirus (known as COVID-19), the demand for large numbers of ventilators and CPRs has increased in hospitals and health centers. In fact, providing a large number of these devices is difficult, in addition to their high cost and providing a suitable place for them. Therefore, there is an urgent need to use the concepts of reverse engineering in the design and manufacture of low-cost portable devices for use by patients on site. This paper presents an attempt to apply the concepts of reverse engineering to the design and construction of a low-cost portable cardiopulmonary resuscitation and ventilator device. This device can be used in ambulances, health centers, or hard-to-reach remote places. The main parameters of the implemented device can be adjusted directly by the operator or remotely by a specialist. The device is considered as a node in the wireless sensor network that can be accessed by a specialist to update the parameters according to the patient's condition.

Keywords: *Mechanical ventilation, Bag volume mask, Low-cost ventilator, Portable ventilator, CPR, Real-time monitoring.*

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