ROLE OF REVERSE OSMOSIS PLANTS ON PURIFICATION OF DRINKING WATER IN CKDU PREVAILING AREAS IN ANURADHAPURA, SRI LANKA

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Reverse Osmosis (RO) plants have been established throughout the Chronic Kidney Disease of Unknown etiology (CKDu) prevailing areas in Sri Lanka for the provision of safe drinking water. However, a proper mechanism to monitor the quality of water and the operation and maintenance procedures of these systems is yet to be developed. Therefore, this study was conducted to determine the quality of the drinking water, consumer attitude and perception and maintenance procedures adopted of the RO plants established in selected CKDu prevailing areas of Anuradhapura district. Forty RO plants were selected based on four categories namely; community, school, domestic and commercial levels. Water samples were collected once-a-month for a period of three months (May to July 2017) and two detailed questionnaire surveys were conducted using 200 consumers and 40 operators. Data collected from water quality analysis were compared with the drinking water quality standards approved by the World Health Organization (WHO) and the questionnaires were analyzed by descriptive statistics using Statistical Package for the Social Science (SPSS). According to the results, all community based, commercial based and domestic level RO plants followed proper operational and maintenance procedures. However, maintenance is weak in school level RO plants. About 97% of the consumers of surveyed sample were totally satisfied with the quality of RO water and a significant improvement was observed in volume of water intake (from 2.54±1.7 l to 3.51±1.8 liters ($p<0.05$)) after fixing of RO plants. Addition to that, 24% of water related health issues which have been previously reported (except CKDu) have declined after providing purified water from RO plants. Quality parameters of treated water were within the WHO standards except some elevated levels of total Coliform in water samples taken from some school and domestic level RO plants and higher Cadmium levels (by average value of 0.021ppm) in most of the water samples. However, this study should be continued to conform the effect of RO purified water on CKDu incidences and to confirm the results on water quality parameters.

Keywords: Chronic Kidney Disease of Unknown etiology (CKDu), Consumer satisfaction, Reverse osmosis (RO), Maintenance, Water quality