



Title	KENKOKUN (Oral Cavity Function Testing Device)
Requestor	Dr Jamaliah binti Omar Senior Principal Assistant Director Oral Health Division Kedah
Reason for Request	To evaluate the use of KENKOKUN as an oral cavity function testing device.

1. INTRODUCTION

Oral cavity function is one of the fundamental factors influencing oral health-related quality of life (OHRQoL) [1] and can be measured by means of oral diadochokinesis (DDK). DDK rate provides information about a person's ability to make rapid speech movements using different parts of the mouth. Measures of DDK are widely used by speech-language pathologists in the assessment of motor speech disorders and they play a role in detecting abnormality, monitoring speech performance changes and classifying syndromes [2].

The assessment of oral DDK consists of phono-articulatory test which enables assessment of lips and tongue function. Several methods to measure oral DDK have been used worldwide, such as :-

- a) The IC method, in which the experimenter measures the recorded sound wave on a recorder
- b) The calculator method, in which the experimenter taps the memory function key of a calculator, synchronized with the syllables
- c) The *dot method*, in which the experimenter dots with a pen, synchronized with the syllables. and
- d) computer programme KayPENTAX Motor Speech Profile [3-5].

Recently, an automated measuring device called KENKOKUN was introduced in Japan and it has been used to measure oral function in several studies [1, 6-8].

2. METHODS

Articles relevant to the topic of interest was searched across electronic databases which include Ovid interface: Ovid MEDLINE, in process & other non-indexes citations, daily and versions year 1946 to present, EBM Reviews – Cochrane Central Register of Controlled Trials August 2020, EBM Reviews – Cochrane Database of Systematic Reviews 2005 to September 2020 and PubMed. Google search engine was used to search additional web-based materials and information. Additional articles were identified from reviewing the references of retrieved articles. The terms used for search strategy (either in singular or in different combinations) were KENKOKUN, oral diadochokinesis, oral function, oral health, automatic, testing device, oral frailty, reliability, accuracy, usage and cost. The last search was conducted on 30th September 2020 and not limited to English language.

3. RESULTS

a. Utilisation

KENKOKUN is commonly used in Japan to measure oral function [6-8] and subsequently detect oral frailty among elderly [9]. This device is designated to assess two oral function indicators, which is oral DDK and Repetitive Saliva Swallowing Test (RSST). Oral function deterioration is associated with various factors which include aging, decline in activities of daily living, malnutrition and cognitive decline [8]. Studies have shown that reduction in articulation activity begins as early as 65 years of age and earlier in women than in men [10]. In addition, it was found that oral DDK is associated with mastication [4] and swallowing function [11]. As of now, KENKOKUN has not been used in Malaysia, not even by the speech therapists.

b. Accuracy

Oral DDK test measures the speed and regularity of articulatory organs (lips and tongue) by making the alternating syllables move as fast as possible. By using KENKOKUN instrument, rapid and repetitive oral motor skills can be assessed quantitatively and easily. The automated function of this device prohibits miscounts in the analysis that are detected in other manual methods [3].

c. Regulations in Malaysia

According to Medical Device Act 2012 (Act 737), a medical device is required to be registered under the Act before it can be imported, exported or placed in the market for clinical usage. For that purpose, registration of a medical device must be made according to the requirement under Act 737 and in the manner determined by the Authority in Medical Device Regulation 2012.

d. Cost-benefit

Information on the cost benefit of KENKOKUN is unavailable in the searches.

4. CONCLUSION & RECOMMENDATIONS

In conclusion, there is still a lack of evidence on the instrument's reliability, validity and efficiency. Therefore, to consider the use of KENKOKUN in Malaysia, Oral Health Programme, Ministry of Health needs to monitor and review new evidence related to the abovementioned aspects from time to time.

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