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Development of an In-house Medication Adherence Assessment Tool using Barcodes and Assessing Compliance to the Tool among Young and Middle-Aged Type II Diabetic Patients in Selected Healthcare Settings

MGA Hansika [1#], GPSG Senadheera[1], and NR Samaranayake[1]

[1]Department of Pharmacy and Pharmaceutical Sciences, Faculty of Allied Health Sciences, University of Sri Jayewardenepura, Sri Lanka

[#]hansikaajani@gmail.com

Medication adherence is essential to providing successful medical care. Barcode based tools have been developed to track medication adherence. This study aimed to develop an in-house tool using barcodes to evaluate medication adherence among young and middle-aged diabetic patients in selected settings, assess and compare medication adherence using the in-house tool and the Morisky Green Levine Scale (MMAS-4), and assess compliance to the in-house tool among patients. The study included two phases: (i) tool development/testing and (ii) an observational study. Patients from five healthcare settings (two hospitals, three community pharmacies) were systematically sampled and followed up for four weeks to assess medication adherence after introducing the new tool. Medication adherence was assessed using the in-house tool and MMAS-4, and follow up phone calls were made to inquire about adherence on days noncompliant with the tool. Paired sample t test and Spearman's rank-order correlation test were used for statistical analysis considering a 5% significance level. Of the 500 diabetic patients approached, 97 participated. Most were male (52.3%), aged 45-59 years (75%), with 42.1% having diabetes for 1-5 years. Analysis revealed no significant difference (p=0.400), positive correlation (Spearman's rho=0.256, p=0.01) between medication adherence assessed from the in-house tool and Morisky. A significant positive correlation was obtained between medication adherence detected from an in-house tool and actual adherences based on phone calls (Spearman's rho=0.804, p=0.01). An in-house tool was developed using barcodes to assess medication adherence that is comparable in accuracy to MMAS-4 and was reasonably compliant. Future developments in the tool are needed to improve patient compliance.

Keywords: *barcodes, medication adherence assessment tool, diabetes mellitus, Sri Lanka*