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Assessing the validity and reliability of a *Prakriti* assessment questionnaire in gynecology cases: A pilot study

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ABSTRACT

This study was designed to validate a *Prakriti* assessment questioner through a scientific method. *Prakriti* is one of a basic concept discussed in Ayurveda which can categories population into several subgroups based on phenotypic characters like appearance, temperament and habits. Traditionally *Prakriti* assessment is done by Ayurveda physician with clinical investigations but in resent era several tools have developed to assess the *Prakriti*, including questionnaires. In this study 54 cases were selected randomly from the outpatient department of the Gynecology unit. The cross cultural adaptation was achieved by translating the questioner from original version, performed by independent mother tongue translator who are with Ayurveda background, followed by the committee review. Test retest reliability was examined for 40 subjects who completed the tool twice within 14 days interval. Cronbach's Alpha was run to test the test retest reliability of the questionnaire. Reliability of the *Prakriti* assessment questionnaire from 1st administration to 2nd attempt was 0.585 to 0.453 respectively. This study noted less than optimal reliability for Sinhala version of the *Prakriti* assessment questioner. Despite this finding, modifications of the tool is still necessitated by the absence of gold standard *Prakriti* assessment measurement for Sinhala speaking population. Therefore, it's necessary for developing more sophisticated tool which can be used for research and clinically in Ayurveda medicine in Sri Lanka.

Key words: *Prakriti*, *Prakriti* assessment questioner, Validity, test re-test reliability

INTRODUCTION

Ayurveda, one of the oldest health sciences of the world is based on the concepts of *Tridosha* and *Prakriti* as the central philosophies.^[1] *Prakriti* is one of a basic concept discussed in Ayurveda which can categories

population into several subgroups based on phenotypic characters like appearance, temperament and habits. *Prakriti* can be define as natural characteristics of an individual. According to Ayurveda both physical and mental compositions of a person is influence by *Prakriti* and it remains constant throughout life of an individual. According to the dominance of *Doshas* *Prakriti* is classified in to seven types; namely *Vataja*, *Pittaja*, *Kaphaja*, *Kaphavataja*, *Kaphapittaja*, *Vatapittaja* and *Sama* *Prakriti*.^[2] Depends on the dominating *Dosha* individuals can categorized under one of these seven *Prakriti* type. It is the basic constitution of an individual which is decided at the time of conception and remains unchanged throughout the life.

Prakriti influences the manifestation and course of diseases in an individual and importantly, an individual's response to treatment.^[3] Ayurveda

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physicians are assessed *Dosha* condition of the patients by diagnosing the *Prakriti*. Traditionally *Prakriti* assessment is done by Ayurveda physician with the help of history taking and examinations on the basis of his knowledge and experience. A recent review conducted on methodology for developing and evaluating diagnostic tools in Ayurveda has recommended, tool development and validation is essential when attempting the personalized diagnosis.^[4] In recent era several tools have developed to assess the *Prakriti* including questionnaires and software. But evidences are limited to show these tools have been subjected to standard test of validity and reliability.^[5,6] This study was designed to validate a *Prakriti* assessment questionnaire through scientific method.

MATERIALS AND METHODS

Selection of tool

Tool selected for the study was used in previous research works to assess the person's *Prakriti*.^[7] This is a questionnaire consist 44 single best answer MCQ (multiple choice questions) with three options available in each question. It was designed with 04 subheadings, physiological status, mental/psychological status, physical features and social or economic status. The cross cultural adaptation was achieved by translating the questionnaire from original version (English) to Sinhala, the national language of Sri Lanka. Translation was performed by an independent mother tongue translator who are with Ayurveda background, followed by a committee review. The main study and relevant documents was approved by Ethics Review Committee of Institute of Indigenous Medicine, University of Colombo, Sri Lanka.

Study setting and sample

In this study cases were selected randomly from the outpatient department of the Gynecology unit of National Ayurveda Teaching Hospital, Borella, Sri Lanka. Women who were clinically stable, understand Sinhala Language and provide written consent were included.

To estimate sample size, from formula of ICC (Interclass correlation coefficient) test^[8] was adopted.

Sample size = interclass correlation with power 80% ;
alpha = 0.05, observation per subject 02.

= 36 + 20 % (for drop out), Total sample = 54

Sampling method = consecutive consenting sampling method

Method of data collection

Data were collected in consultation without disturbing usual clinical functions after obtaining the consent. During the initial test, the participants were not told that they will be re tested after 14 days. Re-test assessment was performed after two weeks of initial testing. Clinical stability of the selected study participants was verified by the clinician before retesting. Comfortable private location was provided to fill the questionnaire. Needful assistance was provided for answering the questionnaire.

Ethical approval

Study with all relevant documents were approved by the ethics committee of Institute of Indigenous medicine Sri Lanka. Required permission was obtained from the study institute before starting the study.

Analysis of data

Collected raw data from 40 cases were analyzed by using SPSS 23.0 software. To test the test retest reliability in questionnaire Cronbach's Alpha was run. Chi-Square test was carried out for investigate Demographic characteristics and relation of characteristics with *Prakriti*.

Prakriti assessment

The score obtained by an individual for answers in the *Vata*, *Pitta* and *Kapha* domain (according to given table in questionnaire) were summed up and the person was identified as having a specific *Prakriti* depending on scores obtained. When a participant scored $\geq 50\%$ on a particular *Dosha*, that was considered as the predominant *Dosha*, whereas a score between 25%-35% categorized the *Dosha* as the

Combined *Dosha* in the *Prakriti*. For example, when a participant scored 20 (54%) for the *Vata* and 13 (32%) for the *Kapha Dosha*, he was categorized as a *Vata-*

Kapha Prakriti. On the other hand if the score was 22 (59%) for the *Kapha Dosha* and 12 (32%) for the *Pitta Dosha*, he was categorized as *Kapha-Pitta Prakriti*.

RESULTS

Out of 54 cases 40 were completed self-administration of *Prakriti* assessment tool at the clinic followed by a 2 week interval (figure 1).

Figure 1: Study recruitment flow chart

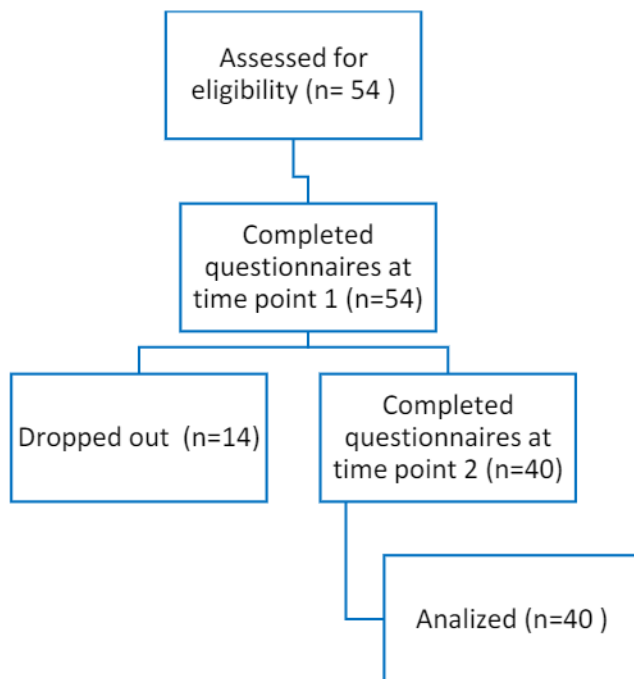


Table 1: Characteristics of the cases (n=40)

Characteristic	n (%)
Age (in year) mean	35 years (24-48)
Ethnicity (Buddhist)	36 (90%)
Marital status (Married)	28 (70%)
Body Mass Index (BMI)	
High (> 25)	13 (32.5%)
Normal (18-25)	23 (57.5%)
Low (< 18)	04 (10.0%)
Age of Menarche (mean)	12.5 years (08-12)

The subjects appear for the study are age between 24 to 48 years, 90% are Buddhist, with majority of the

cases (57.5%) of normal BMI with 32.5% above normal range.

Table 2: Disease wise distribution of study sample (n = 40)

Disease	n (%)
Adenomyosis	04 (10%)
Amenorrhoea	03 (7.5%)
Ovarian cyst	03 (7.5%)
Endometriosis	04 (10%)
Fibroids	10 (25%)
Ovulation failure	08 (20%)
Poly Cystic Ovarian Syndrome (PCOS)	08 (20%)

Diagnosed main disease condition of the study participant were given in table 02. Uterine fibroids, poly cystic ovarian syndrome, subfertility due to ovulation failure are the most common complain reported in study population.

Table 3: Prakriti distribution (n = 40)

Type of Prakriti	%	BMI			Menarche	c/o subfertility
		Low	Normal	High		
<i>Kapha Prakriti</i>	7.5 %	33.3 %	66.7 %	0%	12 yrs (66.7%)	00%
<i>Pitta Prakriti</i>	35 %	28.6 %	50.0 %	21.4 %	11-14 yrs (85.7%)	45.8%
<i>Vata Prakriti</i>	00 %	00%	00%	00%	00%	00%
<i>Pitta Kapha Prakriti</i>	32.5 %	23.1 %	76.9 %	0%	11-13 yrs (84.7%)	33.3%
<i>Vata pitta Prakriti</i>	7.5 %	33.3 %	66.7 %	0%	14 yrs (66.7%)	00%

Vata Kapha Prakriti	00 %	00%	00%	00%	00%	00%
Vata Pitta Kapha Prakriti	17. 5%	57.1 %	28.6 %	14.3 %	13 yrs (42.9%)	20.8%

From the 40 cases Pitta Prakriti is the commonest while no cases reported in Vata Prakriti, Vata Kapha Prakriti. 45.8% cases of subfertility sample were of Pitta Prakriti.

Table 4: Reliability statistics (Cronbach's Alpha) of Prakriti assessment questioner

Scale	N of Items	Before	After
Cronbach's Alpha	44	.585	.453

Reliability for the Prakriti assessment questioner from 1st administration to 2nd attempt was Cronbach's Alpha 0.585 to 0.453 respectively.

DISCUSSION

It is preferably advice to administer any questionnaire only after it is validated. Test-retest reliability can be defined as “a measure of the reproducibility of the scale, that is, the ability to provide consistent scores over time in a stable population”.^[9] The tool selected for the study consist of 44 self-rating questionnaires, with four sections, 16 on physiological states, 08 for psychological states, 19 questions assess physical features and a question for socio-economic status. Each question with three answers consisting characteristics of Vata, Pitta and Kapha. Hence this tool seems to be adequately cover all the aspect of Prakriti assessment.

Deciding the time gap between assessment - The definition of an adequate between-assessment time gap for the retest is of the utmost importance. Studies indicated short time period might allow respondents to recall their first answers, and a longer interval might allow for a comparatively true change of the construct to occur.^[10,11] However, generally it consider

approximately two weeks is often appropriate,^[12] there for 02 week gap was decided for the study. Total 54 selected cases were filled the questionnaire in 1st attempt but only 40 completed the retest attempt. All most 25.9% drop out rate (14 cases) was noticed in this study. Not attending to regular clinics without prior notice was the main reason for this drop out (n=11). Other than that 03 cases were reported with some discomfort, hence investigators were decided to exclude them for re testing.

The subjects appear for the study are all females and age between 24 to 48 years of age (table 1) and 70% of them were married. Buddhist population is the majority. These characters cannot compare with the normal women population of Colombo as the sample was collected from a gynecology clinic. Brake down of Body mass index of the participants would also be not similar to normal population distribution as recent study finding claims high BMI was reported in 13.2% of adult female population^[13] (Jayawardena, & Hills, 2018) of Sri Lanka. In our study 32.5% cases were reported with high BMI. But wide and fair distribution of the age, Body Mass index and diseases were seen in the study population (Table 1, 2) would be a value added fact of this validation study even the sample size is small.

Further study participants were distributed on 07 gynecological conditions which are common to the study setting (Table 02). Even though these conditions sometimes caused extreme clinical presentations with the inclusion criteria such cases were excluded. Further investigators were extremely careful with clinically outcomes of the selected cases throughout the study period (2 weeks) as verifying the clinical stability of the patients before retesting is an important requirement.^[9]

Study characteristics were analyzed related to each type of Prakriti follows almost normal distribution which have reported by previous studies.^[4] Attempt was made to evaluate the relationship between some characteristic of the study sample with their Prakriti. But we could not able to come out with a reasonable association (Table 03). Anyhow more systematic

analysis would have been conducted with larger sample.

Internal consistency testing demonstrated reliability for the *Prakriti* assessment questioner from 1st administration to 2nd attempt was Cronbach's Alpha 0.585 to 0.453 respectively. It is a normal finding that some tools are not reliable in some studies.^[14] Same way this study could show only moderate reliability (Table 04). The adaptation of the scale with further validation will contribute researches to identify *Prakriti* of the Sinhala speaking research participants.

CONCLUSION

This present study appears to be a systematic scientific study of its kind in developing a standardized tool to elicit the *Prakriti*. This study noted less than optimal reliability for Sinhala version of the *Prakriti* assessment questioner. Despite this finding, use of the tool is still necessitated by the absence of gold standard *Prakriti* assessment measure, with the ultimate goal of developing more refined tool which can use for research and clinically. Use of large sample is another recommendation in future studies. Ongoing revisions and refinements are recommended before use this tool in major studies.

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