

# The Filipino Adaptation of the Glaucoma Medication Adherence Self-Efficacy Questionnaire

Ian Ben M. Batcagan, MD<sup>1,2</sup>, Nilo Vincent dG. FlorCruz II, MD<sup>3</sup>

<sup>1</sup>Department of Ophthalmology, Baguio General Hospital and Medical Center, Baguio City

<sup>2</sup>Department of Ophthalmology, Ilocos Training and Regional Medical Center, La Union

<sup>3</sup>Department of Ophthalmology and Visual Sciences, University of the Philippines – Philippine General Hospital, Manila

Corresponding Author: Ian Ben M. Batcagan, MD

Clinic Address: Department of Ophthalmology, Baguio General Hospital and Medical Center, Baguio City, Philippines

Contact Number: +6374-661-7909 local 787

Email Address: ianbenmd@gmail.com

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## ABSTRACT

**Objectives:** This study translated the Glaucoma Medication Adherence Self-Efficacy Questionnaire (GMASQ) and tested the reliability of Filipino-adapted GMASQ.

**Methods:** A Filipino-adapted GMASQ was developed using the guidelines recommended for translating a validated health-related questionnaire into a culturally-adapted one. The methods included: (1) forward translation, (2) back-translation, (3) review and modification, (4) pre-testing and cognitive interviewing, and (5) final version testing. The provisional questionnaire was pre-tested on 20 glaucoma patients to determine its value and correspondence, generating a final forward questionnaire. The final version was administered to 48 patients. Its reliability was determined by computing for the Cronbach's  $\alpha$  for each item, per section, and overall. An item was removed if the  $\alpha$  was  $<0.7$ .

**Results:** Eleven (11) pre-test subjects (55%) preferred the Filipino-adapted questionnaire, 6 (20%) had no preference, and 3 (25%) preferred the source questionnaire. The provisional Filipino-adapted GMASQ proved to be acceptable and with no changes made, the questionnaire was marked as the final version. The medication adherence self-efficacy scale showed Cronbach's  $\alpha$  of  $> 0.8$  for all items with a section  $\alpha = 0.84$ . The eye-drop technique had an  $\alpha > 0.7$  for each item and a section  $\alpha = 0.80$ .

**Conclusion:** This study provided preliminary evidence of the feasibility, acceptance and reliability of the Filipino GMASQ.

**Keywords:** Glaucoma, Medication Adherence, Self-Efficacy, Questionnaire, Translation

Glaucoma is a chronic progressive disease and the second leading cause of blindness worldwide.<sup>1</sup> Multiple clinical trials have shown that with effective medical treatment, blindness can be prevented. It is also vital that there is continuous long-term cooperation of the patient with glaucoma management proposed by the doctor. However, adherence to glaucoma medication is often poor.<sup>2</sup> The World Health Organization (WHO) reported that adherence among patients with chronic diseases averages only 50% in developed countries and even lower in developing countries. Non-adherence to medications is a significant public health issue because it leads to poor health outcomes and increased healthcare costs.<sup>3</sup>

Glaucoma medication adherence can be measured by pharmacy data, self-report, or through the use of medication monitors. The Glaucoma Medication Adherence Self-Efficacy Questionnaire (GMASQ) is the first self-efficacy and adherence measure for glaucoma patients.<sup>4</sup> It was developed to examine a subject's self-confidence in using eye drops correctly and adherence to glaucoma medications.<sup>4</sup> The questionnaire has two subscales; a 10-item glaucoma medication adherence self-efficacy scale and a 6-item eye drop technique self-efficacy scale.<sup>5</sup> The adherence and self-efficacy scales were found to be strongly associated with adherence assessed by the Medication Electronic Monitoring System (MEMS) and the video-taped eye drop technique.<sup>6</sup>

In order to have valid insights on several aspects of medication adherence (ie. local prevalence, factors that influence non-adherence, and the methods to improve medication adherence), it is fundamental to correctly measure glaucoma-medication adherence. Thus, there is a need to use local measurement tools, especially since the Philippines is diverse, and there are non-English speaking populations.

Currently, there is no Filipino version of the GMASQ. Clinicians without a suitable health-related quality of life tool in their own language have two choices: (1) develop a new measuring tool; or (2) modify a previously validated assessment tool in another language, known as cross-cultural adaptation process.<sup>7</sup> The latter involves the following steps: (1) forward translation, (2) back-translation, (3) review and modification, (4) pre-testing and cognitive interviewing, and (5) final version testing.

Filipino versions of the assessment tools using the guidelines proposed by Guillemin, such as the Glaucoma Quality of Life Questionnaire (GQL-15)<sup>8</sup> and the Filipino Dry Eye Screening Questionnaire<sup>9</sup> were tested and found valid. This current study aimed to translate the GMASQ and test the reliability of the Filipino-adapted GMASQ.

## METHODS

The original GMASQ was translated into Filipino and involved the steps described below.

### *Forward translation*

Forward translation (FT) of the questionnaire from English to the Filipino language was done to produce a local version semantically and conceptually close to the original questionnaire. Two qualified, independent linguistic translators, a professor in Sociology and a teacher in Filipino who are both proficient in the Filipino and English languages, made the translations. Each of the translators produced a FT of the original questionnaire without mutual consultation. Translators were instructed that their approach in translation should be conceptual rather than literal translation of the text. Two investigators reviewed each FT and resolved issues on technical terms, colloquialism, and gender-sensitive terms or expressions that might be offensive to the target population and came up with one revised forward translation (RFT).

### *Back-translation*

A back-translation (BT) of the RFT questionnaire was carried out at the language institution of the University of the Philippines Manila, *Sentro ng Wikang Filipino*. The back translators were not given *a priori* knowledge of the content of the GMASQ to ensure bias-free translation of the Filipino-adapted questionnaire back to English. The emphasis in BT was also on conceptual and cultural equivalence and not linguistic equivalence.

### *Review and modification*

The two investigators reviewed and compared all translations. They identified and resolved the inadequate expressions, concepts, and terms, assessed inconsistencies and arrived at a consensus, generating a final forward translated (FFT) questionnaire.

### Pre-testing and cognitive interviewing

The FFT questionnaire and the source questionnaire were administered to a small group of patients in a glaucoma clinic. The 20 subjects rated their proficiencies in both English and Filipino from a scale of 1-10 and answered both English and Filipino-adapted questionnaires consecutively on the same day. They were encouraged to comment on the questions that they deemed unclear and asked which questionnaire they preferred answering. Comments gathered during the pre-test determined if the FFT needed further revision.

### Final version testing

The FFT GMASQ was tested on 48 glaucoma patients. The *Cronbach's a* was computed for each item in the Medication Adherence Self-Efficacy Scale (Adherence) and Eye Drop Technique Scale (Technique). The section *Cronbach's a* for the Adherence and Technique scales were computed, including the overall for both. Items with reliability scores better than fair ( $a > 0.7$ ) were retained<sup>10</sup> and those scored lower were removed.

### Study Population

The sample population was recruited from the Glaucoma Clinic of the Sentro Oftalmologico Jose Rizal, Philippine General Hospital from September to October 2016. After obtaining ethics committee approval, the patients were selected by systematic sampling based on the following inclusion criteria: glaucoma patients between the ages of 21 to 85 years, on at least one anti-glaucoma medication for at least one month, and with evidence of glaucomatous optic neuropathy based on the International Society of Geographic and Epidemiological Ophthalmology (ISGEO) guidelines. Patients who could not read or write in English and Filipino and those who had cognitive or mental disorders were excluded from the study.

After obtaining informed consent, the FFT and source questionnaires were given to the subjects to answer on their own but guided by the investigators if there were unclear questions or responses. The FFT GMASQ was administered by a researcher.

### Sample Size Calculation

The sample size was calculated based on the minimum required sample size for a questionnaire validation study; this was obtained by multiplying the number of questions by 3.<sup>11</sup> The GMASQ is a 16-

item questionnaire; therefore, a total of 48 subjects were included in the final testing.

## RESULTS

Twenty (20) patients participated in the pretest of the FFT. Mean age was 59 years; most were males and majority earned a degree in college (**Table 1**). Mean self-rated English proficiency was 7.3 points. Eleven preferred answering the Filipino-adapted questionnaire, 3 preferred answering the English version, and the remaining 6 had no preference. No questions were deemed to be unclear and no problems were detected in terms of acceptance, comprehension of the questionnaires content or wording. The provisional FFT of the GMASQ was considered acceptable and no further changes were made.

**Table 1.** Demographic and clinical profile of glaucoma patients in the pretest phase (N=20).

Characteristic	Value
Mean Age $\pm$ SD, years	59.1 $\pm$ 9.0
Male Sex, n(%)	11 (55%)
Education Level Attainment, n(%)	
Primary	2 (10%)
Secondary	6 (30%)
College	11 (55%)
Post-graduate	1 (5%)
Mean Self-Rated English Proficiency $\pm$ SD	7.3 $\pm$ 1.0
Range	6-10
Preferred Questionnaire, n(%)	
English	3 (15%)
Filipino	11 (55%)
Either	6 (30%)
Number (%) of antiglaucoma bottles	
1 bottle (monotherapy)	12 (60%)
1 bottle (fixed combination)	3 (15%)
2 bottles	2 (10%)
> 2 bottles	3 (15%)
History of Glaucoma Procedure, n(%)	
None	6 (30%)
Laser	3 (15%)
Filter Surgery	5 (25%)
Laser + Filter Surgery	6 (30%)
Glaucoma Severity, n(%)	
Mild	5 (25%)
Moderate	11 (55%)
Severe	4 (20%)

\*SD- standard deviation

The FFT was administered to 48 glaucoma patients. There was fair distribution between the males and females. Most finished a degree in college (**Table 2**). Majority used 1 eye drop bottle (46%), followed by 2 bottles (33%), and 13% used more than 2 different glaucoma eyedrops. Glaucoma severity classified according to the Hodapp-Parrish-

Anderson Criteria was mild in 14 (29%), moderate in 20 (42%), and severe in 4 (29%) patients.

**Table 2.** Demographic and clinical profile of glaucoma patients in the reliability test (N=48).

Characteristic	Value
Mean Age ± SD, years	59.14 ± 8.28
Sex, n(%) Male Female	21 (44%) 27 (56%)
Education Level Attainment, n(%) Primary Secondary College Post-graduate	9 (19%) 18 (37%) 21 (44%) --
Number (%) of antiglaucoma bottles 1 bottle (monotherapy) 1 bottle (fixed combination) 2 bottles > 2 bottles	22(46%) 4 (8%) 16 (33%) 6 (13%)
History of Glaucoma Procedure, n(%) None Laser Filter Surgery Laser + Filter Surgery	8 (17%) 9 (19%) 17 (35%) 14 (29%)
Glaucoma Severity, n(%) Mild Moderate Severe	14 (29%) 20 (42%) 14 (29%)

\*SD- standard deviation

Each item in the 10-point medication adherence scale had a *Cronbach's a* of >0.8 and the total for the section was 0.85 (**Table 3**). Each item in the 6-point eye-drop technique scale had an *a* >0.7 and the total for the section was 0.81 (**Table 3**). Overall, the *Cronbach's a* for the entire Filipino-translated GMASQ was 0.87.

**Figure 1** shows the final Filipino-adapted GMASQ.

## DISCUSSION

A provisional Filipino-adapted GMASQ was pre-tested alongside the original version of the GMASQ. Half of the subjects (55%) preferred the Filipino-adapted questionnaire, 20% had no preference, and 25% preferred the source questionnaire. The provisional Filipino-adapted

GMASQ was acceptable to the subjects and no further changes were made to the questionnaire.

There was evidence of scale reliability assessed by the internal consistency of the questionnaire reported by the *Cronbach's a*. For the section on medication adherence, an overall *a* of 0.85 suggests good internal consistency and each of the 10 items scored > 0.80. Likewise, for the section on eye drop technique, overall *a* of 0.81 also suggests good internal consistency.

**Table 3.** Reliability test of the Filipino-adapted 10-item Medication Adherence Self-Efficacy Scale.

Scale	Question Number	<i>Cronbach's a</i>
Medication Adherence Self-Efficacy Subscale	Q1a	0.86
	Q1b	0.85
	Q1c	0.82
	Q1d	0.83
	Q1e	0.83
	Q1f	0.84
	Q1g	0.83
	Q1h	0.81
	Q1i	0.82
	Q1j	0.82
	<b>Section Overall</b>	<b>0.85</b>
Eyedrop Techniques Subscale	Q2a	0.75
	Q2b	0.79
	Q2c	0.79
	Q2d	0.79
	Q2e	0.75
	Q2f	0.78
	<b>Section Overall</b>	<b>0.81</b>

As a whole, the Filipino-adapted GMASQ had *Cronbach's a* of 0.87, higher than the *a* scores for each section. However, it may not make sense to report *a* for the test as a whole, as the larger number of questions will inevitably inflate the value of *a*.<sup>10</sup> In principle, *a* should be calculated for each of the concepts rather than for the entire test. Current standards for translation procedures are lacking and few researchers report their methods of translation.<sup>12</sup> This paper describes the 5-step methodology used in the adaptation process and it was straightforward with no issues encountered.

To date, this is the first study on a Filipino-adaptation of a glaucoma medication adherence questionnaire. The researchers provided a foundation for evaluating topical medication

adherence in glaucoma patients using the Filipino version of the GMASQ, especially for those who are more comfortable with the Filipino language. Our study has several limitations. First, validity testing was not done. Second, the sample size may not be large enough to generalize to other populations, particularly in rural areas where local dialects are popular. Future studies should take note of these limitations and address them.

In summary, this study has provided preliminary evidence of the feasibility, acceptance, and reliability of the Filipino GMASQ. The 5-step methodology used focused on cross-cultural and conceptual adaptation.

1. Gaano ka kasiguro sa iyong sarili na makakayanan mong ipatak ang iyong mga gamot na pamatak para sa glaucoma?

	Hindi sigurado	Medyo sigurado	Siguradong-sigurado
a. Kung wala kang sintomas nito?	1	2	3
b. Kung kasama mo ang pamilya mo?	1	2	3
c. Kung ikaw ay nasa pampublikong lugar?	1	2	3
d. Kung natatakot kang palagiang dumepende sa mga ito?	1	2	3
e. Kung nasa biyahe ka?	1	2	3
f. Kung kailangan mong gamitin ito nang higit pa sa isang beses sa isang araw?	1	2	3
g. Kung minsan ito'y mahapdi/makirod sa mata?	1	2	3
h. Kung minsan ay naiirita ka sa pakiramdam na may buhangin sa iyong mga mata?	1	2	3
i. Kung naiirita ka sa pakiramdam na may malagkit o magaspang sa paligid ng mata mo?	1	2	3
j. Kung minsan ay natutuyo nito ang iyong mga mata?	1	2	3

2. Gaano ka kasigurado na nagagawa mo ang mga sumusunod?

	Hindi sigurado	Medyo sigurado	Siguradong-sigurado
a. Pagpisil sa bote/mga bote ng pamatak?	1	2	3
b. Nailalagay ng tama ang bawat patak ng gamot sa iyong mga mata?	1	2	3
c. Alinsunod sa tamang dami ang gamot na naipapatak sa mata sa tuwing gagamitin ito?	1	2	3
d. Tamang posisyon ng ulo mo para sa eksaktong pagpatak ng gamot?	1	2	3
e. Pagpapakatak ng tamang dami ng gamot sa mata nang hindi lilihis/sasablay o sosobra ito?	1	2	3
f. Hindi naididikit sa mata ang bote ng gamot?	1	2	3

Figure 1. Filipino-adapted Glaucoma Medication Adherence Self-Efficacy Questionnaire (GMASQ).

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