

Development and Validation of a “Pelita Harapan” Questionnaire Assessing Knowledge, Attitude, and Practice Toward Coronavirus Disease 2019 Among Young People in Indonesia

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Citation : Sharleen Winata, Andree Kurniawan. Development and Validation of a “Pelita Harapan” Questionnaire Assessing Knowledge, Attitude, and Practice Toward Coronavirus Disease 2019 Among Young People in Indonesia.

Medicinus. 2020 October; 8(3):117-130

Keywords: Attitude; COVID-19; Knowledge; Practice; Questionnaire; Young People.

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Online First : June 2021

Abstract

Introduction: Coronavirus Disease 2019 (COVID-19) has become a pandemic. Much false information was circulating especially through social media and affected individual's knowledge, attitude, practice (KAP) towards COVID-19. Currently, there is lack of validated questionnaires to assess KAP about COVID-19 especially in Indonesian young people.

Aim: To develop and validate a new COVID-19 KAP questionnaire for young people population in Indonesian language.

Methods: Some literature review was done to look for the concept to generate a new questionnaire. Open-ended questions were generated to know the baseline knowledge. Then, close-ended questions were formulized for knowledge, attitude, and practice area. The experts and several respondents were asked to give their opinions about the contents of the questionnaire. The validity was examined using Cronbach's alpha coefficient. For reliability, internal consistency was examined by using Pearson or Spearman correlation test.

Results: A total of 59 subjects with median ages 21 (16-24) years old of non-medical individuals were included in this validation process. More than half were male, mostly held bachelor's degree/diploma, and were dominated with students. This Indonesian COVID-19 KAP questionnaire for young people consists of 10 knowledge, 8 attitude, and 7 practice questions. The Cronbach's alpha coefficient of knowledge, attitude, and practice areas were 0.87, 0.82, and 0.91, respectively.

Conclusions: A questionnaire of KAP towards COVID-19 in Indonesian language had been developed and the results showed good validity.

Introduction

In March 2020, World Health Organization (WHO) declared Coronavirus Disease 2019 (COVID-19) as a pandemic. Its positive cases increased day by day since it first appeared in Wuhan, China in December 2019. Globally, the mortality rate of COVID-19 was 3.4%.¹ Its transmission rate (R_0) was 3.5 to 4, which means one person can transmit the disease up to four other people.² Our focus in this study were young people, that contribute to 24.01% of Indonesia's total population,³ who could transmit the virus to the other person even they were asymptomatic,⁴ yet, have a great potential to contribute to stopping COVID-19 transmission.^{5,6}

A knowledge, attitude, and practice (KAP) survey is useful in evaluating the effectiveness of intervention programs. Also, it can assess a target group's current knowledge, attitude and practice on a specific health topic to identify their needs, problems and possible barriers before developing and implementing an intervention.⁷ Individual's knowledge, attitude, and practice towards COVID-19 are very important components to prevent and stop the spread of COVID-19. KAP could increase people's awareness about the prevention of illness, health-seeking behavior, and broadcast the right information to other individuals.^{8,9}

Much false information was circulating in the community especially through social media and affected individual's KAP towards COVID-19.¹⁰ Knowledge, attitude, and practice, in general, is widely evaluated using a questionnaire.¹¹ Currently, there is a lack of validated questionnaires to assess KAP about COVID-19, especially in Indonesian young people. In this study, we would like to develop and validate a questionnaire to assess Indonesian KAP towards COVID-19 to generate educational strategies about COVID-19 and its prevention.

Method

The KAP questionnaire was developed through a series of steps. First, questionnaire development consisted of a literature review followed by an open-ended questions-survey to delve into the domains and the items to be considered in the questionnaire and a nominal group technique by the experts to validate the content of the developed questionnaire. Secondly, the validity and reliability test of the questionnaire would be done in the target population to obtain the statistical values.

Questionnaire development

Item Generation

MeSH terms such as "Knowledge, Attitude, and Practice", "COVID-19" OR "outbreak", and "Questionnaire" were used to look for relevant articles and related questions from previous questionnaires in medical search engines and some journals. The literature review was done to look for the concept to generate a new questionnaire. We generated 9 open-ended questions (2 regarding virology, 2 regarding clinical presentation and risk factors, 2 regarding prevention and control, and 3 regarding symptoms handling) and 1 close-ended question (regarding information of official government website for COVID-19) to explore the understanding of the potential subjects. This open-ended-questionnaire was broadcasted to young people respondent via google form through the social media conducted in the second week of the outbreak of COVID-19 in Indonesia.

A total of 355 respondents filled the questionnaire. The eligible participants were Indonesian residents aged 10 to 25 years, and those who were studying or active in health science fields were excluded. The participants were required to complete an e-consent form and then a self-reported questionnaire. The answers of those respondents were listed from the commonest answered to the least

in every question. The results of these descriptive studies have been sent for publication. From those results, we got the preliminary background of young people's basic knowledge toward COVID 19 and the domains needed in the questionnaire.¹² Then, we formalized yes or no questions for knowledge and practice and five-likert scale for attitude questions. Firstly, we developed 41 questions from all parts of KAP including all domains of knowledge.

Those questions then were reviewed by three experts in internal medicine and adolescent health. The experts were asked to give their opinions qualitatively about the contents of the KAP questions and quantitatively regarding the clarity, coverage, relevance, and representativeness by the score every question from 1 to 5 based on the quality of the questions. From the expert opinions, we discussed to omit or change the questions. Since this is a questionnaire to evaluate KAP on adolescent it is important to involve their opinion regarding the quality of the questionnaire, we asked as many as 4 young people subjects aged 18 to 22 years old to give their opinions about the clarity of the questions by an open-ended answer. For the second time, we asked again the experts to give their opinions. After all the authors give score 4 of 5, then this step was finished. Cronbach's alpha coefficient was obtained from the final results of these experts.

From this step, all of the subjects shared a good perspective about the questions. At the end, there were 25 questions of KAP, consist of 10 knowledge, 8 attitude, and 7 practice questions.

Validity and Reliability

The final questionnaire then broadcast via google form through social media to young people in Indonesia to get KAP results. Some of these subjects then were evaluated for external reliability. The results from every question were coding if the answered correct by binary coding. The

Pearson or Spearman correlation test was conducted to know the results of the external reliability. We score good reliability if the r results for the majority (more than 80 percent) questions. We also did the normality distribution test as the prerequisite to move to the next step.

Construct validity was measured by exploratory factor analysis if the normality distribution test is good and there was no hypercolinearity (r more than 0.8) between the questions. Keiser-Meyer-Olkin (KMO) measure of the sampling adequacy and Bartlett's test of sphericity for sampling adequacy. If the KMO value was more than 0.5 and Bartlett's test was significant (p value<0.001), the sample was considered as adequate. The last step was to know if all the questions can be grouped into domains of knowledge.

Internal consistency in validity was examined by using Cronbach's alpha coefficient from the three experts related to the content of questions. Cronbach's alpha coefficient used to evaluate the homogeneity of each area. A good internal consistency presented by Cronbach's alpha coefficient 0.7 or higher.¹³

Data Analysis

Statistical Package for Social Science (SPSS) version 23 was used for data analysis. A descriptive statistic was used to analyze demographic data. Correlations between each question were established by correlation matrix if $r > 0.4$ and $p\text{-value} < 0.05$. The questions that correlated will be included in the next questionnaire. Cronbach's alpha coefficient was evaluated by experts' scoring of ambiguity, accuracy, and representativeness of each item, which the experts will give the score by five-point Likert Scale, from 1 (very bad) to 5 (very good).

Results

Questionnaire Development

Based on literature review, 9 open-ended questions and 1 close-ended question were developed to assess subjects' basic understanding toward COVID 19 that consisted questions on etiology, transmission, sign and symptoms, risk factors, complications, and preventions. From 355 subjects aged 19.93 ± 2.91 , we found that most young people of Indonesia had an overall moderate-good knowledge towards COVID-19 but there was a lack of understanding about crucial preventive measures. Further study was needed to apprehend more detail about the preventive aspect. Thus, we expand and highlight some questions concerning preventive measures in this KAP questionnaire.

The final questionnaire contains 25 items representing three areas: 10 items regarding knowledge (1 item regarding etiology (K1), 3 items regarding transmission (K2 to K4), 1 item regarding sign and symptoms (K5), 1 item regarding complication (K6), and 4 items regarding prevention (K7 to K10)), 8 items regarding attitude (A1 to A8) (1 item about teenagers' role to resolve this pandemic), and 7 items regarding practice (P1 to P7). The final questionnaire can be seen in Table 1.

From the qualitative interview with 4 young people they stated that in general the questionnaire was understandable. The separation by domains was said to be useful. They found that the questionnaire is not too general thus they could learn something out of the questions. Yet, some of them still felt that 10-15 minutes taken to fill in the questionnaire was too long. They expressed their wishes for the questionnaire not asking what most people must have known nor asking some too specific questions that they did not even understand the meaning of the word, thus it may cut the time to fill it. Two young people mentioned some questionnaires were too difficult for them; these questions were then omitted or change in the next step.

Validation

A total of 59 subjects with median ages 21 (16-24) years old of non-medical individuals were included in this validation process.

More than half were male, mostly held bachelor's degree/diploma, and were dominated with students. Further details information can be seen in Table 2.

Firstly, we evaluated for the normality distribution test whether it was normal distribution. Correlation matrix was developed to analyze the correlation of each item. In knowledge area, we got the r value range from 0.357 to 0.56. In attitude area, the r value ranges from 0.405 to 0.697. And in practice area, we got the r value range from 0.42 to 0.603. Further results could be seen in table 3,4 and 5.

Content validity and face validity were examined in expert evaluation and pretest. Sampling adequacy was established by Kaiser-Meyer-Olkin (0.479) and the Bartlett's Test of sphericity (p value < 0.001). Kaiser's criterion was used to enter the 25 items into the analysis. Internal consistency of this questionnaire was good determined by Cronbach's alpha coefficient of 0.87 for the whole questionnaire. Cronbach's alpha coefficient of knowledge, attitude, and practice areas were 0.87, 0.82, and 0.91, respectively. Further results could be seen in table 6.

Discussion

To the best of our knowledge, this is the first validated questionnaire knowledge, attitude, practice of COVID-19 in Indonesia's young people population.

Our preliminary survey found that the general knowledge towards COVID-19 was relatively good especially because the data was taken just 2 weeks after the Indonesian government officially announced the outbreak. However, there were some important concern regarding the specific preventive measure knowledge such as physical distancing and hand washing.¹² Thus, in our final questionnaire we have significant numbers of questions around specific COVID-19 preventive measures which are 4 questions out of 10 in the knowledge area, 5 questions out of 8 in the attitude area and 3 questions out of 7 questions in practice area. There was a significant difference in numbers of item

between this questionnaire and KAP questionnaire toward COVID-19 that was in Chinese population. The Chinese KAP questionnaire consisted of 12 items regarding knowledge (Cronbach's alpha of their knowledge area was 0.71), 2 items regarding attitude, and 2 items regarding practice. This questionnaire had been used to evaluate residents' awareness toward COVID-19 during rapid rise period of the outbreak.¹⁴

Most of our questions on preventive measure were made based on the latest Indonesian government education material,^{15,16} to search how well the young people understand the message. The gap found would help the preventive program to improve.

There was a significant difference in numbers of item between this questionnaire and KAP questionnaire toward COVID-19 that was in Chinese population. The Chinese KAP questionnaire consisted of 12 items regarding knowledge with only 3 questions around preventive measures, only 2 items regarding attitude towards the government action on the pandemic, and 2 items regarding practice.¹⁴ The difference may be due to that this was a questionnaire aimed to general public.

The thorough answers that were provided qualitatively by 4 young people who were interviewed implicitly showed their eagerness to be part of the effort to combat this pandemic. Furthermore, since young people a valuable resource and network in the society, including during crisis and public health emergencies (United Nations Population Fund (UNFPA) technical brief), thus we include 2 specific questions in each area around youth participation.¹⁷

The participated young people in this validity survey were boys predominated (59.3%). A study done in university faculty in the United States that tend to have higher respond rate in female faculty found that this was not merely because of the gender itself, but because of the disproportionate of the gender in the population. Thus, an online survey was concluded to be free of gender bias.¹⁸

The targeted age of this validity survey was accordance to the intended population (middle and late adolescent age) with minimal age was 16 and maximal age was 24 distribution. However, the age distribution was not normal with median 21 years old that may reveal that the inadequate heterogeneity of the population. However, the validity and internal consistency of this questionnaire were satisfying. This was might due to good response of the experts and Cronbach's alpha coefficient of 0.87 for the whole questionnaire. This questionnaire also had been used in survey in other population and showed good evaluation of knowledge, attitude and practice.¹⁹

There were some limitations of this study. Firstly, we did not perform an initial focus group discussion nor series of in-depth interview with adolescents to have an in-depth understanding of their KAP and need. However, we did an open-ended survey with a big sample of 355 adolescents which shape the initial construction of the questionnaire. Thirdly, the KMO value for sample adequacy in this study was 0.47, it means the samples were not adequate enough, so more samples were needed.

The strength of this study was this is the first COVID-19 KAP questionnaire for Indonesia's young people population in the early outbreak, thus it was started from scratch. The open-ended questions to 355 adolescents was significantly helped to gain a valuable amount of data to construct the first version of the questionnaire. Adding to this, we had a qualitative individual interview in the middle of the questionnaire development process which improve our understanding to improve the questionnaire. Moreover, we were lucky to have an adolescent health expert within the questionnaire review team, since it is a scarce expertise in the country.

Conclusion

The knowledge, attitude, and practice questionnaire towards COVID-19 for young people in Indonesia was developed and validated. The validity and internal consistency of this questionnaire were good. This new KAP questionnaire could help to arrange a better COVID-19 preventive program specific for young people based on overall population knowledge to improve their attitude and practice. In the clinical settings, this questionnaire could help practitioners to inform their adolescent patients better.¹⁵

List of Abbreviations

COVID-19 = Coronavirus Disease 2019
KAP = Knowledge, attitude, Practice
KMO = Keiser-Meyer-Olkin
SPSS = Statistical Package for Social Science

UNFPA = United Nations Population Fund
WHO = World Health Organization

Acknowledgement

The authors thank all the subjects involved in this study for their support. There is no conflict of interest all authors contributed to this study.

Authorship contributions

Concept: A.K; Design: S.W., A.K., F.H.A., C.J., D.A.H., S.A.; Data Collection or Processing: S.W., A.K., C.J., D.A.H., S.A., C.M.A.; Analysis or Interpretation: S.W., F.H.A., C.J., D.A.H., S.A., A.K.; Literature search: S.W., A.K., C.J., D.A.H., S.A.; Writing: S.W., A.K., F.H.A., N.P.H.L.

Table 1. “Pelita Harapan” Questionnaire of Knowledge, Attitude, and Practice Toward COVID-19 Among Young People in Indonesia

No	Statement	Response
Knowledge		
Etiology		
K1	COVID-19 is caused by bacteria that invade to the body	True/False
Transmission		
K2	Sneeze can transmit the virus that causes COVID-19	True/False
K3	Mosquito can transmit the virus that causes COVID-19	True/False
K4	Something that touched by many people (e.g door's handle), can caused the virus that causes COVID-19 be transmitted from one person to another person	True/False
Sign and Symptoms		
K5	Diarrhea is not one of the symptoms that may be found in COVID-19	True/False
Complication		
K6	COVID-19 can damage the heart	True/False
Prevention		
K7	Using a mask is one of the way to prevent transmission	True/False
K8	Keeping the distance within 2 meters is recommended	True/False
K9	Washing hands at least 10 seconds is recommended	True/False
K10	The Indonesian government doesn't yet have an official website that contain news about COVID-19 handling	True/False
Attitude		
A1	Keeping the distance between people in minimal 2 meters can reduce COVID-19 transmission	5-point Likert Scale*
A2	Application of cough etiquette to prevent transmission of COVID-19	5-point Likert Scale*
A3	I need to read updated news/ information related to COVID-19	5-point Likert Scale*
A4	Washing hands with soap of minimal 20 seconds can prevent COVID-19 transmission	5-point Likert Scale*
A5	Eating vegetables and fruits can help boosting the immunity	5-point Likert Scale*
A6	Face mask usage can prevent transmission	5-point Likert Scale*

A7	I am worried that my father/mother/grandfather/grandmother will be infected by the virus that causes COVID-19	5-point Likert Scale*
A8	Teenagers and young people can play a role in preventing the transmission of the virus that causes COVID-19	5-point Likert Scale*
Practice (in past 2 weeks)		
P1	Do you wash your hands at least 20 seconds after your activity to prevent transmission of COVID-19?	Yes/No
P2	Do you cover your mouth and nose when you cough or sneeze with a tissue or your elbow?	Yes/No
P3	Have you opened and read the official website of the government about COVID-19 (covid19.go.id)?	Yes/No
P4	Do you use face mask to prevent transmission?	Yes/No
P5	Do you easily spread the information that you get from social media?	Yes/No
P6	I encourage my family/friends/people around me to obey the government's policy	Yes/No
P7	I encourage my family/friends/people around me to help somebody who are in difficult condition in this pandemic	Yes/No

*1= very not important/ strongly disagree/ very not worry, 2= not important/ disagree/ not worry, 3= not really important / disagree / less worried, 4= important / agree / worry, 5= very important / strongly agree /very worried

Table 2. Demographic Characteristics of the Participants

Variables	Median (min-max)	Frequency	Percentage (%)
Age (years old)	21 (16-24)		
Gender			
Female		24	40.7
Male		35	59.3
Highest level of education			
Tertiary		33	55.9
Secondary		26	44.1
Occupation			
Employee		19	32.2
Entrepreneur		3	5.1
Student		35	59.3
Unemployed		2	3.4

Table 3. Correlation matrix of items in the knowledge statement

		K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
K1	Pearson Correlation	1	0.432**	-0.079	-0.079	-0.079	-0.246	-0.045	-0.034	0.097	-0.071
	<i>p-value</i>		0.001	0.554	0.554	0.558	0.063	0.737	0.802	0.467	0.595
K2	Pearson Correlation	0.432**	1	-0.055	-0.055	-0.054	-0.073	-0.031	0.073	-0.014	0.04
	<i>p-value</i>	0.001		0.684	0.684	0.687	0.587	0.818	0.587	0.917	0.766
K3	Pearson Correlation	-0.079	-0.055	1	-0.055	-0.054	-0.457**	-0.031	-0.119	-0.014	0.04
	<i>p-value</i>	0.554	0.684		0.684	0.687	0	0.818	0.372	0.917	0.766
K4	Pearson Correlation	-0.079	-0.055	-0.055	1	0.103	0.119	0.567**	-0.119	0.148	0.218
	<i>p-value</i>	0.554	0.684	0.684		0.444	0.372	0	0.372	0.267	0.101
K5	Pearson Correlation	-0.079	-0.054	-0.054	0.103	1	-0.053	-0.119	-0.204	0.042	0.101
	<i>p-value</i>	0.558	0.687	0.687	0.444		0.692	0.372	0.125	0.753	0.451
K6	Pearson Correlation	-0.246	-0.073	-0.457**	0.119	-0.053	1	0.068	0.156	-0.058	0.01
	<i>p-value</i>	0.063	0.587	0	0.372	0.692		0.614	0.243	0.665	0.94
K7	Pearson Correlation	-0.045	-0.031	-0.031	0.567**	-0.119	0.068	1	-0.068	0.176	0.224
	<i>p-value</i>	0.737	0.818	0.818	0	0.372	0.614		0.614	0.187	0.091
K8	Pearson Correlation	-0.034	0.073	-0.119	-0.119	-0.204	0.156	-0.068	1	-0.385**	-0.01
	<i>p-value</i>	0.802	0.587	0.372	0.372	0.125	0.243	0.614		0.003	0.94
K9	Pearson Correlation	0.097	-0.014	-0.014	0.148	0.042	-0.058	0.176	-0.385**	1	0.047
	<i>p-value</i>	0.467	0.917	0.917	0.267	0.753	0.665	0.187	0.003		0.728
K10	Pearson Correlation	-0.071	0.04	0.04	0.218	0.101	0.01	0.224	-0.01	0.047	1
	<i>p-value</i>	0.595	0.766	0.766	0.101	0.451	0.94	0.091	0.94	0.728	
** Correlation is significant at the 0.01 level (2-tailed).											

Table 4. Correlation matrix of items in the attitude statements

		A1	A2	A3	A4	A5	A6	A7	A8
A1	Pearson Correlation	1	0.027	0.341**	0.189	0.366**	0.077	-0.041	0.087
	<i>p-value</i>		0.838	0.009	0.155	0.005	0.564	0.761	0.517
A2	Pearson Correlation	0.027	1	0.082	0.095	0.115	0.225	0.095	.269*
	<i>p-value</i>	0.838		0.539	0.479	0.39	0.089	0.477	0.041
A3	Pearson Correlation	0.341**	0.082	1	0.164	0.191	0.09	0.019	0.138
	<i>p-value</i>	0.009	0.539		0.219	0.152	0.503	0.887	0.301
A4	Pearson Correlation	0.189	0.095	0.164	1	.0544**	0.432**	0.23	0.223
	<i>p-value</i>	0.155	0.479	0.219		0	0.001	0.082	0.092
A5	Pearson Correlation	0.366**	0.115	0.191	0.544**	1	.509**	0.2	0.161
	<i>p-value</i>	0.005	0.39	0.152	0		0	0.131	0.227
A6	Pearson Correlation	0.077	0.225	0.09	.432**	0.509**	1	0.295*	0.353**
	<i>p-value</i>	0.564	0.089	0.503	0.001	0		0.024	0.007
A7	Pearson Correlation	-0.041	0.095	0.019	0.23	0.2	0.295*	1	0.281*
	<i>p-value</i>	0.761	0.477	0.887	0.082	0.131	0.024		0.032
A8	Pearson Correlation	0.087	0.269*	0.138	0.223	0.161	0.353**	0.281*	1
	<i>p-value</i>	0.517	0.041	0.301	0.092	0.227	0.007	0.032	
** Correlation is significant at the 0.01 level (2-tailed).									
* Correlation is significant at the 0.05 level (2-tailed).									

Table 5. Correlation matrix between items in practice statements

		P1	P2	P3	P4	P5	P6	P7
P1	Pearson Correlation	1	0.263*	0.002	0.108	-0.038	0.22	0.280*
	<i>p-value</i>		0.046	0.989	0.42	0.775	0.097	0.033
P2	Pearson Correlation	0.263*	1	0.019	0.401**	-0.114	0.279*	0.038
	<i>p-value</i>	0.046		0.886	0.002	0.395	0.034	0.777
P3	Pearson Correlation	0.002	0.019	1	-0.038	0.323*	0.164	0.085
	<i>p-value</i>	0.989	0.886		0.778	0.014	0.217	0.528
P4	Pearson Correlation	0.108	0.401**	-0.038	1	-0.005	0.321*	0.071
	<i>p-value</i>	0.42	0.002	0.778		0.967	0.014	0.595
P5	Pearson Correlation	-0.038	-0.114	0.323*	-0.005	1	0.107	0.242
	<i>p-value</i>	0.775	0.395	0.014	0.967		0.426	0.068
P6	Pearson Correlation	0.22	0.279*	0.164	0.321*	0.107	1	0.441**
	<i>p-value</i>	0.097	0.034	0.217	0.014	0.426		0.001
P7	Pearson Correlation	0.280*	0.038	0.085	0.071	0.242	0.441**	1
	<i>p-value</i>	0.033	0.777	0.528	0.595	0.068	0.001	

Table 6. Cronbach's alpha coefficient of knowledge, attitude, and practice areas

Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
K1	48.0517	12.927	0	0.607
K2	48.1034	12.831	0.029	0.607
K3	48.1034	13.147	-0.167	0.618
K4	48.1034	12.515	0.229	0.596
K5	48.5	12.57	0.03	0.615
K6	48.8448	12.204	0.195	0.595
K7	48.069	12.802	0.115	0.604
K8	48.2586	12.757	0.001	0.614
K9	48.4138	12.492	0.058	0.611
K10	48.3103	12.428	0.098	0.605
A1	44.2931	11.86	0.261	0.587
A2	44.3103	12.288	0.104	0.606
A3	45	11.158	0.25	0.588
A4	44.6552	10.195	0.502	0.54
A5	44.4655	10.744	0.546	0.545
A6	44.6552	9.739	0.563	0.524
A7	44.6207	11.082	0.182	0.607
A8	44.3276	11.382	0.397	0.569
P1	48.1724	12.321	0.216	0.594
P2	48.1379	12.612	0.117	0.602
P3	48.6207	11.748	0.271	0.585
P4	48.1207	12.915	-0.029	0.612
P5	48.8103	12.648	0.03	0.612
P6	48.0862	12.852	0.031	0.607
P7	48.2069	12.518	0.107	0.603

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