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Infertile Self-Efficacy, Satisfaction with Life, and Well-Being in Infertile Patients

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ABSTRACT

Infertility is a disease characterized by the inability to establish a clinical pregnancy after 12 months or more having regular and unprotected sexual intercourse, or due to an impairment of a person's capacity to reproduce either as an individual or with his/her partner. The aim of this study was to examine the relationships between infertile self-efficacy (ISE), life satisfaction, and well-being in infertile patients. This study was conducted at two private Maternity and Children Hospital clinic, and a private Obstetrics and Gynecology clinic in Central Java, Indonesia, during May-July 2019. In this prospective an analytical observational study with cross sectional design, infertile patients with primary and secondary infertility who attended to the clinics and during the period mentioned, and were willing to become research participants and complete the questionnaire booklets. The independent variable of this study was the Infertility Self-Efficacy measured by ISES-SF, whereas the dependent variables of this study were the Satisfaction with Life measured by SWLS, and Well-Being measured by WBI. Infertility self-efficacy had a positive significant relationship with satisfaction with life (p<0.001), infertility self-efficacy had a positive significant relationship with well-being (p<0.001), and satisfaction with life had a significant relationship with well-being (p<0.001) in both male and female patients. Both male and female infertile patients who have higher levels of infertility self-efficacy are more likely to demonstrate higher degrees of satisfaction with life and well-being. Those who have higher levels of life satisfaction also tend to have greater levels of well-being.

1. INTRODUCTION

Infertility is a disease characterized by the inability to establish a clinical pregnancy after 12 months or more having regular and unprotected sexual intercourse, or due to an impairment of a person's capacity to reproduce either as an individual or with his/her partner. Infertility can be divided into primary and secondary infertility. According to The International Glossary on Infertility and Fertility Care, primary infertile female is a woman who has never been diagnosed with a clinical pregnancy and meets the criteria of being classified as having infertility, while secondary female infertility applies to a woman who is unable

to establish a clinical pregnancy but has previously been diagnosed with it [1].

World Health Organization (2014) estimated that 8-12% of reproductive-aged couples worldwide or 60-80 million couples were diagnosed with infertility. The number is increasing year by year, that WHO defined it as a global public health [2].

A growing body of research shows a high incidence of negative reactions to infertility and its treatment that impact patient's life satisfaction and well-being. Therefore, nowadays health-systems do not only focus on morbidity and mortality, but also subjective well-being and quality of life [3]. Well-being is an emotional response that evaluates an individual's welfare in the life they are living [4]. Subjective well-being includes two major components which are: an affective component and a cognitive component [3]. Life satisfaction is a cognitive process, and is found to be lower in couples with infertility [5]. The way infertile patients cope with negative reactions of infertility is affected by infertility self-efficacy (ISE). ISE is perception of patients of their ability to use cognitive skills to control emotions related to their infertility condition. Self-efficacy is an indicator of an individual's ability to use stress coping skills and the use of personal resources necessary to meet situational demands. An infertile patient with a high level of ISE is more likely to have better emotional stability and stronger insistence on treatment. Hence, high ISE enhances health behaviors and improves health status, and may even increase the probability of pregnancy [2], [6].

A number of studies have demonstrated various negative psychological, behavioral, and social effects that an infertility partner may have on both members of an infertility partner who expects a child [7], [8]. An infertile sexual partner has a wide variety of negative emotions including anxiety, fear, isolation, depression, guilt, and helplessness. Previous study which involved Turkish participants demonstrated a positive relationship between self-efficacy and satisfaction with life, and additionally, life satisfaction was correlated negatively with several psychopathologic symptoms such as depression, anxiety, low self-efficacy, and loneliness [9]. However, study explaining correlations between ISE, life satisfaction, and well-being in infertile patients has not been examined. Therefore, the relationships among these variables are worth exploring.

2. Methods

An analytical observational study with cross sectional design was conducted at two private Maternity and Children Hospitals clinics, and a private Obstetrics and Gynecology clinic in Central Java, Indonesia. The samples are 207. The inclusion criteria of this study were infertile patients (both male and female) with both primary and secondary infertility who attended to the clinics and during the period mentioned, age 20-60 years old, and were willing to become research participants and complete the survey booklets. The exclusion criteria for this study were infertile patients whose age were more than 60 years old and who decided not to continue filling out the survey package or those who did not fill in the questionnaires completely. Samples were taken using a purposive sampling technique.

The survey booklets consisted of an informed consent, Infertility Self-Efficacy Scale Short Form (ISES-SF) [10], Satisfaction with Life Scale (SWLS) [11], Well-Being Index (WBI) [12], and demographic questions. The survey items were provided in Bahasa Indonesia. The questionnaires were translated from English to Indonesian using the translation-back-translation procedure [13]. The data were processed using the SPSS Statistic 23.0 application from International Business Machines Corporation 2016.

2.1 Findings and Discussion

1. Result General

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a. Demographic Variable

Table 1. Demographic Variable

Demographic factor		Total respondents (207)		Correlation with WBI (*p* value) in female patients	Correlation with SWL (*p* value) in female patients	Correlation with WBI (p value) in male patients	Correlation with SWL (*p* value) in male patients
		Male (105)	Female (102)				
Age	<30 years	33	46	0.039	0.211	0.202	0.61
	30-35 years	41	49				
	>35 years	31	7				
Duration of marriage	<5 years	59				0.321	
	≥ 5 years	46					
Age of marriage	<20 years	4	13			0.173	
	≥ 20 years	101	89				
Last educational level	Elementary school	1	1	0.657	0.075	0.240	
	Junior high school	6	2				
	Senior high school	21	16				
	Bachelor degree	68	61				
	Master degree	8	9				
	Doctoral degree	1	0				
	Others	0	13				
Type of family	Nuclear family	75				0.781	
	Extended family	30					
Duration of infertility	< 5 years	70	65	0.457	0.853	0.510	0.65
	≥ 5 years	35	37				
Type of infertility	Primary	86	82	0.182	0.712	0.841	0.59
	Secondary	19	20				
Job status	Employed	102	14	0.381	0.649	0.892	0.80
	Unemployed	3	88				
Income (the average of regional minimum wage in Central	<2 million/month	23	33	0.308	0.135	0.789	0,005
	2-5 million/month	44	50				
	5-10 million/month	28	16				

Java is 2 million/month)	>10 million/month	10	3				
Cause of infertility	Female factor	6	13	0.475	0.647	0.330	0.11
	Male factor	36	26				
	Combination	47	51				
	Unknown yet	16	12				
Previous medical treatment	Taken	81	94	0.816	0.616	0.278	0.16
	Not taken	24	8				
Type of treatment	Conventional therapy	97		0.107		0.502	
	IVF/ICSI/IVF	7					
	IUI	1					
Biological children	0	97	92	0.379	0.284	0.325	
	1	7	9				
	2	1	1				
Adopted children	0	102	98			0.224	
	1	3	4				

Table 1 shows demographic variables in infertile patients

b. Correlation between ISE and SWL

Table 2. Correlation between ISE and SWL (General)

		Total of SWL	SWLS 1	SWLS 2	SWLS 3	SWLS 4	SWLS 5
Total of ISE	**R**	**0.40****					
	p-value	**<0.001**					
ISE 1	R		0.30**	0.30**	0.33**	0.29**	0.11
	p-value		0.001	0.001	0.001	0.001	0.11
ISE 2	R		0.29**	0.30**	0.28**	0.25**	0.000
	p-value		0.001	0.001	0.001	0.001	0.937
ISE 3	R		0.25**	0.30**	0.32**	0.27**	0.14*
	p-value		0.001	0.001	0.001	0.001	0.32
ISE 4	R		0.27**	0.24**	0.37**	0.26**	0.18**
	p-value		0.001	0.001	0.001	0.001	0.006
ISE 5	R		0.21**	0.19**	0.29**	0.27**	0.038
	p-value		0.001	0.001	0.001	0.001	0.586
ISE 6	R		0.18**	0.29**	0.31**	0.17*	-0.29
	p-value		0.006	0.001	0.001	0.14	0.677
ISE 7	R		0.94	0.18**	0.15*	0.17*	0.11

	p-value	0.179	0.009	0.023	0.013	0.090
ISE 8	R	0.18**	0.36**	0.26**	0.20**	0.18**
	p-value	0.007	0.001	0.001	0.004	0.008

Table 2 shows correlation between infertility self-efficacy and satisfaction with life evaluated in both male and female patients using a non-parametric analysis, showing that infertility self-efficacy had a positive significant relationship with life satisfaction ($p<0.001$). Correlation coefficients were positive on both correlations between the total of ISE and the total of SWL, and between all domains of ISE and all domains of ISE except ISE 6 and SWLS 5. The highest positive correlation coefficient among ISE and SWL domains was found on the relationship between ISE 5 and SWLS 5.

c. Correlation between ISE & WB

Table 3. Correlation between ISE and WB (General)

		Total of WB	WBI 1	WBI 2	WBI 3	WBI 4	WBI 5
Total ISE	**R**	**0,39****					
	p-value	**<0.001**					
ISE 1	R		0.22**	0.26**	0.29**	0.20**	0.24**
	p-value		0.001	0.001	0.001	0.001	0.001
ISE 2	r		0.27**	0.23**	0.24**	0.06	0.21**
	p-value		0.001	0.001	0.001	0.324	0.002
ISE 3	R		0.19**	0.28**	0.33**	0.32**	0.28**
	p-value		0.005	0.001	0.001	0.001	0.001
ISE 4	r		0.18**	0.21**	0.22**	0.20**	0.21**
	p-value		0.008	0.002	0.001	0.004	0.001
ISE 5	r		0.19**	0.26**	0.28**	0.23**	0.27**
	p-value		0.006	0.001	0.001	0.001	0.001
ISE 6	R		0.26**	0.33**	0.34**	0.30**	0.34
	p-value		0.001	0.001	0.001	0.001	0.001
ISE 7	R		0.21**	0.16*	0.11	0.19**	0.13
	p-value		0.002	0.016	0.09	0.04	0.47
ISE 8	r		0.32**	0.32**	0.23**	0.20**	0.25**
	p-value		0.001	0.001	0.001	0.003	0.001

Table 3 displays correlation between infertility self-efficacy and well-being in both male and female patients using a non-parametric correlation, showing that infertility self-efficacy had a positive significant relationship with well-being ($p<0.001$). Correlation coefficients were positive on correlations between the total of ISE and the total of WB, and between all domains of ISE and all domains of WB. The highest

positive correlation coefficient among ISE and WB domains was found on the relationships between ISE 6 and both WB 3 and WB 5.

d. Correlation between SWL and WB

Table 4. Correlation between SWL and WB (General)

		Total of SWL	SWLS 1	SWLS 2	SWLS 3	SWLS 4	SWLS 5
Total of WBI	**R**	**0.43****					
	p-value	**0.001**					
WBI 1	R		0.30**	0.26**	0.28**	0.23**	0.09
	p-value		0.001	0.001	0.001	0.001	0.174
WBI 2	R		0.36**	0.41**	0.32**	0.35**	0.20**
	p-value		0.001	0.001	0.001	0.001	0.003
WBI 3	R		0.28**	0.33**	0.30**	0.27**	0.97
	p-value		0.001	0.001	0.001	0.001	0.164
WBI 4	R		0.29	0.25**	0.21**	0.18**	0.04
	p-value		0.001	0.001	0.001	0.008	0.505
WBI 5	R		0.32	0.33**	0.23**	0.29**	0.19**
	p-value		0.001	0.001	0.001	0.001	0.005

Table 4 displays correlation between satisfaction with life and well-being in both male and female patients using a nonparametric correlation analysis, showing that satisfaction with life had a significant relationship with well-being (p<0.001). Correlation coefficients were positive on both correlations between the total of SWL and the total of WB, and between all domains of SWL and all domains of WB. The highest positive correlation coefficient of SWL and WB domains was found on the correlation between SWL 5 and WB 3.

2.2 Male Patients

a. Demographic Variables

1) Correlation between demographic factors and well-being in male patients

Table 1 reports the relationship between each demographic item and well-being in male patients, which demonstrated no significant relationships.

2) Correlation between demographic factors and satisfaction with life in male patients

Table 1 displays the non-significant relationship between age ($p = 0.61$) and infertility duration ($p = 0.65$). There was a significant difference in the level of life satisfaction on the income variable ($p = 0.005$), where after the post hoc test there was a significant difference between the groups <2 million / month and 5-10 million / month ($p = 0.040$), the group <2 million / month with> 10 million / month ($p = 0.008$), group 2-5 million / month with 5-10 million / month ($p = 0.028$), and group 2-5 million / month with> 10 million / month ($p = 0.003$). From all demographic variables in this study, values of p <0.25 were found on the experience of childbirth ($p = 0.021$), income ($p = 0.005$), previous treatment (0.16) and causes of infertility ($p = 0.11$).

b. Correlation between ISE and SWL in male patients

Correlation between infertility self-efficacy and well-being was evaluated in male patients using a nonparametric correlation analysis, showing that infertility self-efficacy had a significant correlation with satisfaction with life (p<0.001). Correlation coefficient was positive on both correlations between the total of ISE and the total of SWL, and between all domains of ISE and all domains of SWL. The highest positive correlations coefficient of ISE and SWL domains were found on the correlation between SWL 3 and both ISE 3 and ISE 4.

c. Correlation between ISE and WB in male patients

Correlation between infertility self-efficacy and well-being was evaluated in male patients using a nonparametric correlation technique, showing that infertility self-efficacy had a significant correlation with well-being (p<0.001).

Table 5. Correlation between ISE and WB in male patients

ISE	WB 1	WB 2	WB 3	WB 4	WB 5
ISE 1					
R	0.146	0.222	0.214	0.221	0.228
P	0.138	0.023*	0.028*	0.024*	0.020*
ISE 2					
R	0.241	0.093	0.181	0.004	0.166
P	0.013*	0.343	0.065	0.968	0.090
ISE 3					
R	0.199	0.304	0.331	0.254	0.259
P	0.041*	0.002*	0.001*	0.009*	0.008*
ISE 4					
R	0.055	0.129	0.155	0.250	0.224
P	0.580	0.191	0.115	0.010*	0.021*
ISE 5					
R	0.102	0.193	0.205	0.229	0.220
P	0.302	0.048*	0.036*	0.019*	0.024*
ISE 6					
R	0.296	0.308	0.386	0.247	0.337
P	0.002*	0.001*	0.000*	0.011*	0.000*
ISE 7					
R	0.163	0.062	0.162	0.149	0.288
P	0.097	0.528	0.099	0.129	0.003*
ISE 8					
R	0.325	0.298	0.234	0.288	0.291
P	0.001*	0.002*	0.016*	0.003*	0.003*

Table 5 shows that correlation coefficient was positive on both correlations between the total of ISE and the total of WB, and between all domains of ISE and all domains of WB. The highest positive correlation coefficient of ISE and WB domains was found on the correlation between ISE 6 and WB 3.

d. Correlation between SWL and WB in male patients

Table 6. Correlation between SWL and WB in male patients

		SWLS	SWLS 1	SWLS 2	SWLS 3	SWLS 4	SWLS 5
WBI	Correlation	.435					
	p-value	<0.001					
	N	207					

	Correlation	.354**	.305**	.269**	.287**	.238**	.095
WBI 1	*p*-value	0.00	0.00	0.00	0.00	0.01	174
	N	207	207	207	207	207	207
	Correlation	.430**	.368**	.412**	.325**	.351**	.209**
WBI 2	*p*-value	0.00	0.00	0.00	0.00	0.00	0.03
	N	207	207	207	207	207	207
	Correlation	.315**	.287**	.330**	.305**	.273**	.097
WBI 3	*p*-value	.000	.000	.000	.000	.000	.164
	N	207	207	207	207	207	207
	Correlation	.281**	.299**	.254**	.211**	.185**	.047
WBI 4	*p*-value	.000	.000	.000	.002	.008	.505
	N	207	207	207	207	207	207
	Correlation	.347**	.323**	.330**	.236**	.293**	.196**
WBI 5	*p*-value	.000	.000	.000	.001	.000	.005
	Cronbach's Alpha	207	207	207	207	207	207

Table 6 reports correlation between satisfaction with life and well-being evaluated in male patients using a non-parametric correlation, demonstrating that satisfaction with life had a positive significant correlation with well-being (p<0.001). Correlation coefficients were positive on correlations between the total of SWL and the total of WB, and between all domains of SWL and all domains of WB. The highest positive correlation coefficient of SWL and WB domains was found on the correlation between SWL 2 and WB 2.

2.3 Female Patients

a. Demographic Variables

1) Correlation between demographic factors with satisfaction with life in female patients

Table 1 shows that there were no significant relationships between demographic factors (age, last educational level, duration of infertility, type of infertility, job, income, etiology of infertility, history of treatment, and history of having a child) and SWL scores in infertile women.

Demographic variables carried out bivariate test with p value <0.25, that were age (p=0.211), educational level (p=0.075), and income (p=0.135), were then performed a multivariate test with multiple linear regression test. There were no association between age, educational level, and income variable and SWL score (p>0.05). These results showed that all demographic variables had no significant contribution in affecting SWL scores.

2) Correlation between demographic factors with well-being in female patients

There was no significant relationship between each demographic item and well-being in female patients.

b. The characteristics of female patients based on their ISE and SWL scores

The average ISE score was 38.59 (SD=4.37) and SWL score was 21.92 (SD=3.12). The minimum score of ISE-SF was 22 and the maximum score was 48 of which the total score was 48. On the other hand, the

minimum score of SWLS was 12 and the maximum score was 29 of which the total score was 30.

c. The relationship between ISE-SF and SWLS in female patients

Correlation between infertility self-efficacy and satisfaction with life was evaluated in female patients by a nonparametric correlation technique, the result demonstrated that infertility self-efficacy had a significant correlation with satisfaction with life ($p<0.001$).

Table 7. Relationship between ISE-SF and SWLs in Female Respondents

ISE	SWL	SWL	SWL	SWL	SWL
ISE					
R	0.334	0.309	0.305	0.302	0.156
P	0.001*	0.002*	0.002*	0.002*	0.117
ISE					
R	0.373	0.428	0.343	0.406	0.048
P	0.000*	0.000*	0.000*	0.000*	0.633
ISE					
R	0.240	0.307	0.315	0.291	0.149
P	0.015*	0.002*	0.001*	0.003*	0.134
ISE					
R	0.340	0.306	0.341	0.338	0.163
P	0.000*	0.002*	0.000*	0.001*	0.102
ISE					
R	0.203	0.164	0.265	0.342	0.092
P	0.041*	0.099	0.007*	0.000*	0.359
ISE					
R	0.248	0.302	0.257	0.173	0.015
P	0.012*	0.002*	0.009*	0.081	0.883
ISE					
R	0.058	0.156	0.062	0.201	0.185
P	0.566	0.117	0.536	0.043*	0.063
ISE					
R	0.143	0.421	0.207	0.241	0.227
P	0.152	0.000*	0.037*	0.015*	0,022*

Table 7 shows that most domains of ISE had a significant relationship with the domains of SWL. The highest positive correlation coefficient was found on the correlation between ISE 2 and SWLS 2 with a correlation coefficient of 0.428.

d. The relationship between ISE-SF and WB in female patients

Correlation between infertility self-efficacy and well-being was evaluated in female patients using a nonparametric correlation technique. The finding showed that infertility self-efficacy had a significant correlation with well-being ($p<0.001$).

Table 8. Relationship between ISE-SF and WB in Female Respondent

ISE	WB 1	WB 2	WB 3	WB 4	WB 5

ISE 1					
R	0.303	0.311	0.371	0.199	0.259
P	0.002*	0.001*	0.000*	0.045*	0.009*
ISE 2					
R	0.321	0.385	0.335	0.148	0.271
P	0.001*	0.000*	0.001*	0.138	0.006*
ISE 3					
R	0.199	0.262	0.353	0.415	0.303
P	0.045*	0.008*	0.000*	0.000*	0.002*
ISE 4					
R	0.321	0.315	0.291	0.143	0.211
P	0.001*	0.001*	0.003*	0.151	0.033*
ISE 5					
R	0.299	0.350	0.383	0.251	0.326
P	0.002*	0.000*	0.000*	0.011*	0.001*
ISE 6					
R	0.245	0.373	0.307	0.372	0.344
P	0.013*	0.000*	0.002*	0.000*	0.000*
ISE 7					
R	0.174	0.173	0.239	0.126	0.150
P	0.079	0.082	0.015*	0.207	0.132
ISE 8					
R	0.327	0.359	0.244	0.105	0.216
P	0.001*	0.000*	0.013*	0.294	0.029*

Table 8 shows that correlation coefficient was positive on all the ISE domains associated with the WB domains. The most positive correlation coefficient was found in the correlation between ISE 3 and WB 4 (r = 0.415).

e. The relationship between SWL and WB in female patients

Correlation between satisfaction with life and well-being in female patients was evaluated using a non-parametric correlation procedure, showing that satisfaction with life had a significant correlation with well-being ($p<0.001$).

Table 9. Relationship between SWL and WB in Female Patients

SWL	WBI	WBI	WBI	WBI	WBI
SWL 1					

R	0.434	0.356	0.328	0.178	0.311
P	0.000*	0.000*	0.001*	0.076	0.001*
SWL 2					
R	0.302	0.382	0.326	0.245	0.362
P	0.002*	0.000*	0.001*	0.013*	0.000*
SWL 3					
R	0.372	0.375	0.312	0.220	0.284
P	0.000*	0.000*	0.001*	0.026*	0.004*
SWL 4					
r	0.286	0.411	0.271	0.205	0.430
p	0.004*	0.000*	0.006*	0.039*	0.000*
SWL 5					
r	0.064	0.201	0.062	0.080	0.205
p	0.523*	0.043*	0.535	0.425	0.039*

Table 9 reports positive correlations between all the SWL domains and WB domains. The highest positive correlation coefficient was found in the correlation between SWL 1 and WB 1 ($r = 0.434$).

3. Discussion

1. Correlation between Infertility Self-Efficacy and Well-being in Male Patients

Infertility self-efficacy was positively correlated with well-being in male patients, and significant p values were found in most of the infertility self-efficacy domains and the well being. These results were in line with the formulated hypothesis, where self-efficacy was expected to affect well-being. This finding also showed that infertile patients the who have higher levels of infertility self-efficacy are more likely to have higher levels of well-being. This result was consistent with a study conducted in Serbia, which obtained a significant p value on the correlation between self-efficacy and well-being. The relationship between ISE 6 (Maintaining a positive attitude) and WB 3 (I feel active and excited) demonstrated the highest correlation coefficient. This was consistent with previous study which demonstrated a significant relationship between self-efficacy and well-being [14].

2. Correlation between Infertility Self-Efficacy and Satisfaction with Life in Male Patients

Infertility self-efficacy has a major role in the process of regulation through individual motivation and job preservation. Consideration in self-efficacy also determines the levels of effort people do in carrying out the problem and the amount of time they use to solve the problem. Those who have a good level of self-efficacy are more likely to successfully overcome the problem [15]. As infertile patients are likely to experience a big pressure on a variety of their life aspects together with their partners, including biological, psychological, social, economic, cultural, and relationship aspects, those who have a low level of self-efficacy are more likely to experience negative impact of infertile problems on the levels of life satisfaction [5].

In this study, the mean value of self-efficacy in infertile patients was 38.77 (SD = 6.25). This value was higher than that of infertility self-efficacy found in a Turkey sample, which demonstrated the value of 22.60 (SD = 5.09) (10). Additionally, the mean of life satisfaction rate of infertile patients in this study was 21.83 (SD = 3.1). Domain with the lowest life satisfaction value was SLWS 5, with the value of 3.42 (SD = 1.35), whereas the domain with the highest value was SWLS 3, with the value of 4.82 (SD = 0.8). The value of life satisfaction was lower than that of life satisfaction of infertile male patients found in Australia, which showed the value of 25.4 (SD = 5.60) [16]. This finding is consistent with a study conducted by Oishi and Diener [17], which demonstrated that people from individualistic contexts tend to report a significantly higher life satisfaction than those from collectivistic cultures.

In bivariate analysis, infertility self-efficacy was associated with life satisfaction in infertile patients. The results of infertility self-efficacy were positively correlated with life satisfaction and significant p values in all ISE-SF domains against SWLS. These results were in line with the hypothesis that self-efficacy was predicted to affect life satisfaction [16]. This also showed that infertile patients who have higher levels of self-efficacy are more likely to be satisfied with their life. These results were in accordance with previous studies conducted in Turkey, which obtained significant values in all ISE-SF domains on life satisfaction. The relationships between ISE-SF 4 and 3 and life satisfaction demonstrated the highest correlation coefficients. The result show that controlling negative feelings in suppressing emotions have an important role in increasing individual's life satisfaction, and this finding is consistent with a previous study conducted by Ried and Alfred [17].

In this study, there were significant differences in life satisfaction based on the amount of income. This was consistent with previous studies of higher life satisfaction in patients with medium-high income. Patients with a medium-high income were more likely to experience more life satisfaction in patients, and infertile patients in the process of fertility therapy were more likely to have lower levels of anxiety, as the treatment required a quite high cost [18], [19]. Additionally, the health insurance from the government does not cover the expenses and treatment for infertile problems. Therefore, those who can obtain more income are more likely to feel safe and satisfied with their life, as they tend to be able to afford expenses for medical treatment to cure their infertility problems.

3. Correlation between Infertility Self-Efficacy and Satisfaction with Life in Female Patients

ISE score in infertile women was 38.59 (SD=4.37). The ISE score in infertile women in this study was categorized as moderate. From all of ISE-SF domains, ISE-SF 7 demonstrated the lowest mean score (4.63 ± 0.994), while ISE-SF 6 showed the highest mean score (5.14 ± 0.732). The mean scores of domain ISE-SF 6 and ISE-SF 7 were similar to what have been found in previous studies conducted in China (5.23 ± 2.60), (5.38 ± 2.25), and Korea (5.18 ± 2.44), (5.79 ± 1.85), respectively [17], [20]. The mean of SWL score in this study was 21.92 (SD=3.12). The number was lower than the mean of SWL scores in two similar studies conducted in Iran (23.5 and 23.89) [3], [8]. The SWL score in infertile women in this study was categorized as moderate.

In a bivariate analysis, ISE was found to have a significant positive relationship ($p<0.05$). This result was consistent with the formulated, where infertility self-efficacy was expected to influence life satisfaction. This also showed that infertile women who had a higher infertility self-efficacy were more likely to experience greater life satisfaction. The result is in line with a theory which explained that life satisfaction is correlated negatively with several psychopathologic symptoms, such as depression, anxiety, low self-efficacy, and loneliness [9]. The association between ISE-SF 2 (keep a sense of humor) and SWLS 2 (the conditions of my life are excellent) showed the highest coefficient correlation. These findings are consistent with a theory that explains that humor is one of an individual's character strengths which positively correlates with life satisfaction and well-being indicators [21].

Therefore, ISE could be identified as a beneficial effect in mental health, and might be a cost-effective resource for decreasing depression, anxiety, and fertility problem in infertile women that has the potential to lead to higher pregnancy probability and life satisfaction. The ISE-SF might be useful for health care professionals as a screening instrument to identify patients who feel less competent and frustrated in dealing with infertility and its demanding treatment, and those who might need a amore specific psychological support [6], [20], [22].

This study demonstrated no significant relationships between demographic factors and SWL score. The non-significant relationship between histories of having a child with SWL was identified because of the strong expectations form the extended family and community for the married couple to have more than one child. The desire to have more children was starting to decline when women already had two children, and those two children are boy and girl [25].

In a collectivist country such as Indonesia, the private and collective selves are not separate inherently. Cognitive schemas of the individuals are developed in reference not only to the individuals' own needs but also to the evaluations and expectations of others, especially from significant others such as family members [26]. When a person growing up in a collectivistic setting makes a decision that has a goal of making their significant others happy, it is likely that the decision will make the individual satisfied as well. Therefore, disregarding the wishes of significant others such as extended family, for example to have more than one child, is contradictive of the individual's self-worth [27], [28].

This finding is inconsistent with the results from a study in the United States, which demonstrated that history of having a child was negatively correlated with SWL, as having a child was considered to be a successful effort for infertile patients [23]. Those form individualist country such as the United States, might be aware of their significant others' expectations. However, they would not think it appropriate to prioritize influence from outside of themselves when deciding something, as individual self-reference is more powerful in determining their own actions and additionally, people also are not likely as well to expect personal matters to their circle [30].

This study also found that there was no relationship between income and SWL score in female patients. This was due to the beliefs that wives were not distressed by socio-economic responsibility as their husbands were perceived to be more responsible to handle financial problems in the family [26]. This finding is different from the result of, a study in Turkey showed that income was positively correlated with SWL [10]. Compared to Indonesia, Turkey is a more individualistic country [26]. Previous study has shown that the effect of self-esteem related variables, such as income on life satisfaction judgement is greater in an individualist culture than in a collectivist culture [32], [33].

This study also found that there was no relationship between age, last educational level, duration of infertility, type of infertility, job status, etiology of infertility, history of treatment, and SWL score. These findings demonstrated the high value of having children for a family in Indonesia [34]. Other studies also demonstrated relevant findings, such as a study conducted in Iran which also demonstrated that age, education, and duration of infertility had no relationship with ISE, which then affected SWL [6]. Other similar studies which involved Iranian and United States samples also reported that there were no relationships between these age, education, job, and SWL [14], [23]. In addition, the nonsignificant SWL score difference among women with primary and secondary infertility and among women with infertility caused by male factor, female factor, and combination, was also found in a large Iranian sample [3]. These results demonstrated that having a child is perceived to be important for families in other countries, regardless of age, education, job, cause, and whether the patients experience primary or secondary infertility.

This study demonstrated that desire to have a child was not correlated significantly with SWL score. However, evidences had been reported in previous studies. For example, a study in Italy conflicting demonstrated that a desire to have a child were positively correlated with SWL score and history of infertility treatment could be a stressor that significantly affected SWL [24]. Previous study found that life

satisfaction judgement is predicted exclusively by self-esteem in individualist setting, such as in Italy, whereas in a collectivist culture like in Indonesia, self-esteem and relationship harmony significantly predicted life satisfaction judgement [36]. Individuals from an interdependent culture seek to confirm their harmonious relationships with significant others. Thus, their sense of well-being and physical health may depend more on how well they achieve this relational cultural task [37]. Finding of this study implies that the relationship between desire to have children and life satisfaction might be moderated by relationship harmony, for example perceived acceptance by parents and friends or relationship harmony between husband and wife which was not examined in this study [38]. This possibility might need further exploration in future research.

4. Correlation between Infertility Self-Efficacy and Well-Being in Female Patients

In the bivariate analysis, infertility self-efficacy was correlated with the level of well-being among female infertility patients. The study showed that self-efficacy was positively correlated with well-being. This result was consistent with the formulated hypothesis that self-efficacy was expected to affect well-being of infertility patients. This finding also showed that higher levels of self-efficacy level of infertility patients is more likely to lead to higher levels of well-being. The result of this research was in accordance with a previous study conducted in Serbia, where self-efficacy and well-being was found to be correlated significantly [39].

ISES-SF 3 domain (controlling negative feelings about infertility) demonstrated the highest positive correlation with WBI 4 (I wake up feeling refreshed and calm) among female infertility patients with a correlation coefficient of 0.415. A significant correlation (p <0.005) was also found between the ISES-SF 3 item and the WBI 4 item. This was consistent with a theory that an individual's quality of life is affected by each individual's emotional response. Those who experience negative emotion tend to constantly feel sad, anxious, and worried. They also are more likely not to live their life peacefully. This condition can disrupt the quality of individual's sleeping behavior, make it harder for them to sleep soundly and think clearly because the constant worry of the worst possibilities is continuously disturbing them. Conversely, those who have positive emotion tend to have self-control that makes them feel constantly grateful and happy. Individual who can control the negative feelings about their condition tends to experience a good quality of life, and one of the characteristics of have a good quality of life is having a good sleep quality [40- 42].

One of the factors that influence successful marriage in Indonesian society is the presence of children in the family. Children give hopes and dreams for the future, and children also serves as a representation of the succession of generations in the family. In addition, children have an economic value for both parents. Therefore, having children are seen to be beneficial psychologically, socially, and economically. A study has found that children who were assumed to be able to provide economic benefits and guarantee the family well-being of their parents when they grow older were more likely to make their parents more responsible for ensuring the presence of children in the family, so that they would invest more tangible and intangible support for their children [34].

Our findings have several implications. First, interventions aimed at assisting infertile patients to have higher level of life satisfaction and well-being might include a focus on increasing the level of infertile self-efficacy. This intervention might include an effort to have normal interaction with people in their surroundings so that these patients can possibly obtain more support from their significant others. Additionally, health practitioners and doctors can give more adequate information about a variety of success stories of infertile patients with similar characteristics to have children, so that the patients can have the opportunity to be exposed to more role models, and know how to cope with infertile-related problems and

pressure while being medically treated. This kind of intervention would allow patients with novel experience to compare their own condition with their role models' situations, and explore whether they can have positive outcome expectations from their treatment and persistently follow the treatment procedure to achieve their final goal to have a child. Previous study demonstrated that exposure to role models and positive social persuasion leads to higher self-efficacy [43].

We identified several limitations of this study. Our study was conducted using a sample of infertile patients from two private maternity and children's hospitals, and one clinic in Central Java, Indonesia. Therefore, the findings from this study need to be investigated on other infertile patient populations, such as other collectivistic populations and also in individualistic contexts to explore the cross-cultural differences of the relationships among the study variables. Additionally, the data were collected at one point in time, therefore future researches could focus on testing longitudinal relationships among variables to get more robust causal conclusions. Last, the proportion of female infertile patients outnumber their male counterparts. Therefore, future study needs to consider the gender proportion.

4. Conclusions

Overall, both male and female infertile patient who have higher levels of infertility self-efficacy are more likely to demonstrate higher degrees of satisfaction with life and well-being. Those who have higher levels of life satisfaction also show greater levels of well-being.

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PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15

PAGE 16

PAGE 17

PAGE 18