

The effect of Korean wave on body image and eating disorders among female adolescent in Yogyakarta, Indonesia*

Nurina Umy Habibah¹, A Fahmy Arif Tsani², Sumarni DW³

¹ Department of Health Nutrition, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

² Department of Nutrition Science, Faculty of Medicine, Universitas Diponegoro, Semarang, Indonesia

³ Department of Psychiatry, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

ABSTRACT

Background: Currently, Indonesia is one of the countries affected by the Korean “fever”, which is due to the globalization of the Korean wave through the media. Through the content of K-pop which displayed model characteristics that identical to a slender body, tall, and attractive can lead to the adolescent body image perception. The problem most often experienced by adolescents is physical appearance. The negative body image in adolescence could encourage the emergence of eating behavior disorders known as eating disorders. **Objective:** To analyze the relation between Korean wave exposure through media information with body image and eating disorders risk on female high school students in Yogyakarta. **Methods:** This research used the cross-sectional method with a quantitative approach. The research population was a female first-grade high school student in Yogyakarta. The subjects of 109 female students who are qualified with the inclusion criteria: enrolled student in the selected schools, physical healthy, and willing to take part in the research; are requested to fill out the Korean wave exposure questionnaire to measure the type and frequency of exposure, the Contour Drawing Rating Scale questionnaire to measure the body image, and the Eating Attitude Test 26 to determine the eating disorders risk. Data analyzed with the Chi-Square test and logistic regression test. **Results:** Univariate analysis shown that 11% of the subject was exposed to Korean wave with various type of exposure, 88.1% of the subject was dissatisfied with their body and developed negative body image, and 47.7% of the subject was at risk of eating disorders; 53% of them tend to developed diet behavior, 21.04% bulimia, and 25.96% was in oral intake restriction. Multivariate analysis result showed that Korean wave exposure (RP=1.6; 95%CI=0.7-10.04) has significant correlation with negative body image perception. Eating disorders risk significantly affected by Korean wave exposure (RP=2.1; 95%CI=0.97-4.63) and body image (RP=2.93; 95%CI=1.25-5.49). Chi-Square analysis showed body image has significant correlation with eating disorders risk (RP=6.2; 95%CI=1.25-5.94). **Conclusions:** Exposure to Korean waves affected negative body image in female adolescents. On the other hand, Korean wave exposure and body image also affected eating disorders behavior among female adolescents.

KEYWORDS: body image; eating behavior; eating disorder; female adolescent; Korean wave; k-pop; k-drama

INTRODUCTION

The Korean wave is a form of South Korean culture that is packaged in such a way, is a plan by the Korean government to improve the image of Korea in the eyes of other countries, also proves the strength of this country in transmitting culture and art to other countries to reach all parts of the world. The outbreak of the Korean wave or

in Korean is referred as *hallyu* began in 1997. Currently, Indonesia is one of the countries affected by the Korean “fever”, which is due to the globalization of the Korean wave through the media of information [1]. Television programs, pop music, various books and magazines are forms of media that have a major effect on the regulation of information with international content, especially in

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Corresponding author: Nurina Umy Habibah, Department of Health Nutrition, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Jl. Farmako Sekip Utara, Yogyakarta, 55281, Indonesia, e-mail: nurinaumyhabibah@ugm.ac.id

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Indonesia [2]. Based on research [3] regarding race and ethnicity among K-pop fans, it is known that social media is the most popular type of media in the consumption and distribution of K-pop around the world, reaching 91%. This is because online information regulation is considered faster than off-line media.

The Korean wave phenomenon that appears through the information media is known to have influenced all groups, especially teenagers [1]. Even adolescents in Indonesia constitute 40.55% of access to internet (social media) around the world [4], this is an important factor in the spread of Korean waves among teenagers in Indonesia. Audience acceptance and preference for content in information media can influence and impact changes in life, as well as what happens to adolescents [5]. Based on a qualitative study in the District of Solo for junior high school students, high school students, and college students; it is known that the most Korean wave fans are high school students (teenagers) [6].

Adolescence is a dynamic development phase in an individual's life. This is a period of transition from childhood to adulthood marked by the speed of growth and development of physical, mental, emotional, and social, starting at the age of 9-10 years and ending at the age of 18 years [7]. The immense influence brought by the Korean wave can instill the imagination of Korean wave stars' physical appearance, namely beautiful appearance, energetic, and attractive physical form. The problem most often experienced by adolescents is physical appearance. Various studies on the influence of the media always indicate the results of negative body image assessments, related to the ideal body image provided by the media [8-10]. Teenagers do not have sufficient knowledge of the ideal body shape, while the information they receive in Korean wave content sets the ideal standard at the underweight range even more severely.

According to research results [11], the perception of a wrong body image will lead to dissatisfaction with physical appearance, so that adolescents tend to make various efforts to control their weight and body shape. Teenagers will usually go on a diet so that they can meet expectations of an ideal body image according to him. The diet that is done is usually not correct so that it can

be the beginning of the development of eating disorders. The American Psychological Association explains that deviant eating behavior can cause health problems, including anemia, palpitations, loss of bone and hair mass, tooth decay, esophagitis, and menstrual cycle disorders until menstruation stops.

Based on this background, it can be concluded that the Korean wave in the form of music, drama, film, and other entertainment products showed the characteristics of hallyu stars (Korean celebrities) that are synonymous with slim, tall, and attractive bodies can lead to negative body image perceptions in adolescents. Negative body image in young women can lead to eating disorders. The results of Wijayanti's research show that Yogyakarta as a student city has the potential for teenagers who behave fanatically towards Korean culture, shown by the formation of a Korean wave fan community [12]. Thus, researchers are interested in examining the effects of exposure to Korean waves on body image and eating disorders in young women in Yogyakarta, Indonesia.

METHODS

Study design and participants

This research is non-experimental type. The research was conducted with a quantitative method to measure Korean waves exposure, body image, and the risk of eating disorders. The design of this study was cross sectional to determine the effect of Korean wave exposure on body image and eating disorders. Data retrieval in the study was carried out once at the same time.

The research was conducted in the city of Yogyakarta, namely at a public high school located in an urban area. The reason for choosing such locations is that senior high schools located in urban areas in Yogyakarta City have easier access to information. Determining the research location using simple random sampling method, found SMA Negeri 2 Yogyakarta and SMA Negeri 6 Yogyakarta as research locations. The research was conducted in March - May 2014. The study population was female adolescent who are currently studying at state senior high school in Yogyakarta City. This criterion was chosen as a population with the consideration that high school students are assumed to be aged 15-18 years,

which is a vulnerable group of adolescents and is the peak of emotional development. Even until recently, the phenomenon of Korean wave remain high and this study could suggest that since 2014 the impact of the exposure was not only as entertainment aspect but also on the quality of health, especially on negative body image and development of eating disorders risk.

Determination of research subjects by simple random sampling adjusted to the inclusion criteria, namely active students at the research location and in good health. While the exclusion criteria for subjects were undergoing symptom healing therapy or eating disorders. The sample number in this study was 109 students, plus 10% of the estimated sample drop out, so that it became 120 students. This research has received permission from the Ethics Committee of Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada with number KE/FK/513/EC.

Measures

Korean wave exposure. The measurement used a questionnaire that consists of two parts, namely the introduction of the Korean wave and the type and frequency of exposure. The questionnaire was tested for validity and reliability before being used as a data collection instrument.

Body image. The assessment of adolescents' perception of their body shape used the The Contour Drawing Rating Scale (CDRS) instrument, which is a scale consisting of nine body contour images whose size and weight have increased from severe underweight (1) to very overweight (9).

Eating disorders. Feeding behavior was measured using the Eating Attitude Test questionnaire (EAT-26) which consists of 26 statements about eating behavior associated with the risk of anorexia or bulimia.

Body mass index (BMI). Nutritional status is determined by calculating the body mass index according to age, which consists of the measurement results of body weight (BW) and height (TB) which are entered in the BMI / U graph from World Health Organization (WHO). The tools used for data collection were microtose with an accuracy of 0.1 cm for measuring height, a digital scale with a capacity of 200 kg with an accuracy level of 0.01

kg for measuring body weight. Measurement of height and weight was carried out to determine anthropometric data which could then be used to interpret the nutritional status of the research subjects.

The research implementation was divided into 3 (three) stages, starting with the preparation stage, namely preparing permission, data collection instruments, and technical preparation for data collection. Then proceed with the implementation stage, namely data collection by measuring nutritional status and filling out a questionnaire, done once at the beginning of the data collection process followed by a follow-up confirmation if the data received is incomplete. The last stage is the completion stage, namely the processing and analysis of research data.

Data analysis

The data collected were checked for completeness first, then the coding is carried out to simplify the data entry process. After the data is entered, cleaning is necessary to find out the missing data as some of the subjects did not complete the questionnaire (11 subjects). At the beginning of data collection, purposely more than the needed number of subject was chosen that sufficient number of sample (109) was able to analyzed in the study. Univariate analysis was carried out to determine the frequency distribution and proportion of the characteristics of the research subjects, anthropometric data, Korean wave (Hallyu) exposure data, body image data, and eating behavior data. Bivariate analysis using the Chi-Square test to determine the relationship between two research variables. Bivariate analysis with a significance level of $p < 0.05$. The p-value is used to see the statistical significance of the correlation, if the p-value < 0.05 , the relationship between variables is statistically significant. Multivariate analysis was carried out to determine the relationship between independent variable (Korean wave exposure), intermediate variable (nutritional status), and the dependent variable together. The variables to be tested in the multivariate analysis are those in the bivariate test results that show a significant level of $p < 0.25$. The statistical test used was logistic regression analysis with a significance level of $p < 0.05$ with a 95% confidence interval.

RESULTS

The characteristics of research subjects

Based on the data in **Table 1**, it is known that the mean age of the research subjects was 16.23 years. The area of origin of research subjects is almost entirely from the province of Daerah Istimewa Yogyakarta (DIY). Subjects who come from outside DIY currently lives in the province of DIY.

The description of research variables

Of the 57 research subjects exposed to the Korean wave, 11% were exposed to audiovisual only; 33% were exposed to a mix of audio, visual, and audiovisual types; 7.3% were exposed to audio and audiovisual types; and 0.9% are exposed to visual and audiovisual types. Thus, the exposure to the Korean wave received by the research subjects was varied. The main sources of exposure that are accessed include television, internet, print media, radio, friends or family, as well as events or festivals. Research subjects do not only get exposure from one source. As many as 45% of research subjects admitted to being exposed to more than one type of source.

The average frequency of exposure based on statistical calculations was 16.48 hours/week, with the lowest exposure frequency of 0 hours/week and the highest exposure frequency of 399 hours/week. Not all subjects are exposed to the Korean wave because some research subjects do not know the development of the Korean wave. As many as 22% of subjects did not know the development of the Korean wave, and 55% of subjects did not enjoy the Korean wave. Body image or body perception of research subjects is mostly negative. A total of 96 study subjects (88.1%) were dissatisfied with their current body.

Subjects who are at risk of experiencing food behavior deviations as much as 53% have a tendency to diet behavior, bulimia 21.04%, and control behavior of oral intake 25.96%. The mean score of EAT-26 according to the results of statistical calculations was 10.28 with the lowest score of 0 and the highest score of 27. The nutritional status of research subjects based on **Table 2** was dominated by normal nutritional status. Anthropometric data of research subjects showed the average BMI of research subjects was 21.62 kg/m².

Table 1. The characteristic of subject (n=109)

Variable	n (%)
Age (years)	
15	7 (6.4)
16	70 (64.2)
17	32 (29.4)
Origin (city/district)	
Yogyakarta city	45 (41.3)
Bantul	15 (13.8)
Sleman	45 (41.3)
Kulon Progo	1 (0.9)
Outside of Yogyakarta	3 (2.8)
Residency (city/district)	
Yogyakarta city	47 (43.1)
Bantul	15 (13.8)
Sleman	46 (42.2)
Kulon Progo	1 (0.9)
Outside of Yogyakarta	-

Table 2. The frequency distribution of research variable

Variable	n (%)
Korean wave exposure	
Exposed	57 (52.3)
Not exposed	52 (47.7)
Frequency of exposure	
Low (< 7 hours/week)	76 (69.7)
Moderate (7 – 21 hours/week)	13 (11.9)
High (> 21 hours/week)	20 (18.3)
Body image	
Negative	96 (88.1)
Positive	13 (11.9)
Eating disorders risk	
At risk	52 (47.7)
Not at risk	57 (52.3)
Nutritional status	
Underweight	7 (6.4)
Normal	84 (77.1)
Overweight/obesity	18 (16.5)

The result of multivariate analysis

Multivariate analysis was used to see the relationship between research variables that gave a p-value <0.25 in the bivariate analysis. In the first multivariate analysis, the variables that can be tested are exposure to Korean waves, frequency of exposure to Korean waves, nutritional status, and social support from peer satisfaction aspects (SSQS) with body image. Meanwhile, in the multivariate analysis, the two variables

that can be tested are exposure to Korean waves and body image with the risk of eating disorders.

The test used was logistic regression analysis, with a significance level of $p < 0.05$ and a confidence interval of 95% CI. In the multivariate test, several models were produced to see the influencing variables. The method used in logistic regression analysis is the backward method so that the analysis of each model is carried out automatically by a computer program. Multivariate analysis will automatically stop at the most ideal modeling, namely by looking at the contribution and influence of research variables on the dependent variable.

Using multivariate analysis, all the possible variables was analyzed together to found which model suggested to has relationship with the subject. In contrast to bivariate analysis which only looks at the relationship of one variable, multivariate analysis can describe the relationship of more than two variables at the same time and provide information on the significance of the relationship between each variable. Based on the analysis results in this analysis, model 3 is the best modeling (Table 3). In model 3, it is known that the Korean wave exposure variable statistically have a significant relationship with body image ($p < 0.05$). This model shows that the variable Korean wave exposure contributed 18.4% to the emergence of a negative body image in young girls. Meanwhile, there are 81.6% of other factors that were not examined in this study could influence the

emergence of a negative body image in young women.

Based on Table 4, it is known that in the multivariate test of research variables with the risk of eating disorders, only one model is produced. In this modeling, it is known that the variable exposure to Korean wave and body image has a significant relationship with the risk of eating disorders so that further modeling analysis is not required. This model shows that the variable exposure to Korean wave and body image contributes 44.1% to the emergence of eating disorders risk in adolescent girls. Meanwhile, there are 55.9% other factors that were not examined in this study that could affect the risk of eating disorders in young women.

DISCUSSION

The relationship between Korean wave exposure and body image

In this study, exposure to the Korean wave is viewed from two aspects, namely: exposure to the Korean wave and frequency of exposure to the Korean wave. According to the analysis, 36.7% of young women received exposure to the Korean wave for the first time through mass media including television, 35.8% through friends or family, 22.9% through events or festivals, and 4.6% through other sources. This is possible because television, as a medium that provides audiovisual information, is the main source

Table 3. The result of logistic regression analysis between the relationship of Korean Wave exposure, and nutritional status with body image

	Variabel	Coefisien	p	OR (95% CI)
Model 1	Korean wave exposure	1.932	0.046	1.20 (0.79-18.13)
	Frequency of exposure	-0.565	0.534	0.57 (0.95-3.38)
	Nutritional status	1.022	0.440	2.78 (0.21-37.31)
	Consanta	1.533	0.325	4.63
Model 2	Korean wave exposure	1.968	0.019	2.2 (0.47-10.04)
	Nutritional status	1.022	0.440	0.31 (0.02-3.79)
	Constanta	1.501	0.324	4.48

Table 4. The result of logistic regression analysis between the relationship of Korean Wave exposure, nutritional status, and peer group support with body image

	Variabel	Coefisien	p	OR (95% CI)
Model 1	Korean wave exposure	0.717	0.025	2.12 (0.97-4.63)
	Body image	0.752	0.012	2.93 (1.25-5.49)
	Constanta	-0.012	0.066	1.00

of media exposure accessed by the public. Information broadcast on television also varies, for example news, entertainment, and sports coverage. Exposure to the Korean wave, either in the form of entertainment or other information, is also broadcast on television, so that young women who watch television can get exposure to the Korean wave. This result is supported by previous research regarding the fanatical behavior of teenagers in Yogyakarta towards South Korean culture or known as the Korean wave, that the first exposure to the Korean wave in Indonesia was through television media [12].

Meanwhile, in the variable frequency of exposure to the Korean wave, it was found that in general the research subjects were exposed to Korean waves in low frequencies (69.7%). In the analysis, it was found that the lowest exposure frequency in the study subjects was 0 hours/week or not exposed, and the highest frequency was 399 hours/week. Research subjects who claimed not to be exposed were possible because of them has no interest and tendency to try to access exposure to the Korean wave. Meanwhile, the high frequency of exposure or being extreme can be caused by the behavior of young women who tend to be fanatical in accessing Korean wave exposure. This fanatical behavior will appear especially in young women who enjoy Korean wave products so that they consider various forms of exposure to the Korean wave as part of their lifestyle.

The results of the multivariate analysis show that exposure to the Korean wave is one of the variables associated with the emergence of negative body image in young girls. Girls who are exposed to the Korean wave are 2.2 times more likely to have a negative body image than girls who are not exposed to the Korean wave. This is possible because the exposure to the Korean wave presents a model that is small, thin, visually attractive, and attractive. According to Eunbi [13], Female K-pop idol only 8.8% has normal body mass index (BMI) considered as healthy weight and nutritional status, meanwhile 82% were underweight (BMI 16-18.5), 8% severely underweight (BMI 15-16), and 1.2% were very severely underweight (BMI <15). Models in the information media tend to appear in the form of small and thin bodies which will form the perception that the ideal body is small and thin.

Relationship between nutritional status and body image

In the bivariate analysis between nutritional status and body image, it is known that there is no significant relationship between the two. This is possible because a negative body image appears not only in adolescent girls who are malnourished. Based on the research findings, it is known that negative body image is dominated by subjects who have normal nutritional status (66.1%). Veggi [14] explained that women with underweight and overweight nutritional status have a more accurate body perception than women with normal nutritional status. In general, women who overestimate their body weight have the wrong perception of their body.

According to Botta [15], the problem of body image in young women is the perception of the level of body thinness that is not appropriate, so they tend to expect a body that is thinner than it should be. In general, young women worry if their bodies are too fat or too tall [16]. Salim [17] explains that the peak growth and increase in body fat that occurs at puberty are predisposing factors for concern about body weight and cause body dissatisfaction in adolescents.

Relationship of Korean wave exposure with eating disorders

The results of the multivariate analysis, it is known that exposure to Korean waves is one of the variables associated with the emergence of eating disorders risk in adolescent girls. Girls who are exposed to the Korean wave are 2.1 times more likely to have eating disorders than girls who are not exposed to the Korean wave. Deviant eating behavior may develops as a result of efforts to achieve the body shape desired by young women. This body image emerged because of the depiction of the ideal body shape through the media of information, in this case the model depicted in the Korean wave product content. According to Becker [9], the mechanism for the emergence of eating disorders risk due to media exposure is through a character model that is presented on television, which raises the imagination and perception of the ideal body shape in young women. This then conditions the young women to socially compare

their body size and shape with each other, especially in conditions of active social change. The other factors that influence the development of eating disorders, organic disorders (e.a. hipertiroidisme, diabetes mellitus, and other chronic infections) and psychiatric disorders (e.a. depression, obsessive-compulsive disorder, and schizophrenia) [18].

Relationship of body image with risk eating disorders

The multivariate analysis of body image and the risk of eating disorders show a significant relationship. This can be possible because adolescents are synonymous with periods of instability in mental conditions so the perception of an irrational ideal body shape around them will make adolescents have a negative body image. Based on the mental development of adolescence, they are in the phase of searching for self-identity and starting to recognize the formation of body perceptions. The existence of a measure of physical appearance as a value or measure of superiority makes adolescents follow the surrounding standards in shaping body perceptions [11,19]. Besides, physical growth and development can make adolescents feel that their body mass growth is not following under the desired ideal body shape. Adolescence is a period of development when the individual has an interest in physical appearance and the greatest concern and center of their activity is body weight [20].

Dissatisfaction with body shape and size among young women makes them make various efforts to achieve the ideal body shape and size according to them. Efforts to achieve the ideal weight and body shape tend to be in unhealthy ways and will interfere with normal eating behavior, so that young women are at risk of developing eating disorders. However, the emergence of eating disorders risk in young women is not only influenced by body image. Jung [21] explained that the population from South Korea is more at risk of developing eating disorders related to body image compared to the population from the United States. This is due to social changes that tend to be more active in South Korea, as well as differences in cognitive aspects between the two countries. Thus the emergence of eating disorders risk can also be caused by socio-cultural conditions, race, and other individual factors.

CONCLUSIONS

Exposure to Korean waves is related to body image, namely the prevalence of negative body image in adolescent girls exposed to the Korean wave is greater than girls who are not exposed to Korean waves. Exposure to Korean waves and body images are related to the risk of eating disorders, namely the prevalence of risk of eating disorders in adolescent girls exposed to the Korean wave is greater than girls who are not exposed to the Korean wave. For young women who have a negative or inappropriate body image, it is necessary to have a correct understanding that the wrong body image can play an active role in the risk of eating disorders, which will also have negative consequences for physical and mental health. Further data mining and research is needed regarding the influence of the Korean wave on a more global situation today. Especially studies in different age groups and genders.

Declaration of conflict interests

All authors declare no conflict of interest related to this study. They have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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