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Connection Obesity With Incident Infertility

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ABSTRACT
Prevalence incident infertility globally , 6 % occur in couples age fertile . Besides the , Prevalence incident infertility that occurs in couples age fertile in developing countries is about 50% of case infertility whole . One of dominant factors found as reason infertility is weight . The prevalence of obesity in infertile women is quite high and it is known that there is a link between obesity and infertility. No all partner husband wife easy For get descendants Because a number of someone has experienced it infertility , some case husband or wife with obesity part big experience infertility Studies literature review This aim For know connection obesity with incident infertility . Journal on literature review This using 3 databases including Google Scholar, PubMed, and Science Direct with using keywords obesity and infertility and obesity and infertility . Search literature customized based on criteria inclusion and exclusion . Search result 9 journals were obtained from 2 journals national and 7 journals international . Results show that the average results percentage obesity from article taken as much as 48.004%. Average results percentage incident infertility from article taken as much as 58.852%. Can concluded that There is connection obesity with incident infertility from 9 article own results There is connection between obesity with incident infertility.

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INTRODUCTION

Problem fertility is something quite sensitive for partner husband troubled wife own child . Not all partner husband wife easy For get descendants Because experience infertility (Anggraini , Hasan and Afrida , 2015). Prevalence incident infertility globally , 6 % occur in couples age fertile . Besides the , Prevalence incident infertility that occurs in couples age fertile in developing countries is about 50% of case infertility overall (Vander Borght & Wyns , 2018). In Asia, numbers infertility in couples age fertilereach figure 25% with classification primary infertility as much as 15.8% and infertility secondary as much as 8.7% (Meng et al., 2015). Whereas results Survey Indonesian Demography and Health (2018) said , in 2017 the figures infertility in Indonesia is 12% - 22% of the total population age reproduction with 15% of cases happens to couples age fertile .

According to the American Society for Reproductive Medicine (2017) Causes infertility from wife is factor age , ovulation , tubes, and cervix /uterus. Based on HIFERI (2019) in

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book Consensus Handling Infertility , factors risk in infertility can reviewed from style life like smoking , alcohol, stress, weight , and type work .

One of dominant factor found as reason infertility is body weight , p This explained by Tarigan and Ridmadhanti (2019) , namely 33.3 % of women experienced it infertility own overweight and obesity Obesity need become attention Because own impact No healthy on health . Obesity clear is possible factors increase disturbance fertility women , especially disruption to the cycle menstruation , infertility , complications in pregnancy , and various problem health others (Fontana & Della Torre, 2016). Obesity own effect to cycle menstruation Because exists annoying accumulation of excess fat Work hormones reproduction such as estrogen, FSH (follicle stimulating hormone), and LH (Luteinizing Hormone). (Broughton & Moley, 2017). Cycle menstruation varies between individual . Regularity cycle menstruation be one reject measuring from infertility woman . Own cycle no menstruation regular can show If somebody No ovulate in a way orderly and become one sign symptom infertility . No ovulation regular can caused by many problems , including PCOS (Policystic Ovarian Syndrome), obesity , deficiency weight , and problems thyroid . While the pain is severe moment menstruation can become indicator condition Where there is something network where it is not should be and be one a sign of endometriosis which is factor risk infertility . (Holly Ernst, 2019) Because that , woman with suffering from obesity infertility own 3 times more Lots with possibility pregnancy reduced by 5% per unit BMI exceeding 29 Kg/m2 compared woman with index mass normal body (Dağ & Dilbaz , 2015).

Based on description on that problem infertility in couples age fertile Still Enough tall Good globally as well national . Obesity allegedly is one of factor happen infertility in women . Where are the women with excess weight possibility experience disturbance cycle menstruation consequence disturbed Work hormones LH and FSH so happen unovulation or No There is resulting ovulation cycle menstruation No regular . Women who experience obesity 3 times more risk Lots compared woman with normal body weight . For know more Far about problem that , then writer interested compile something study scientific through studies literature that discusses about connection obesity with incident infertility in couples age fertile , so obtained description and more understanding deep . As for goals from studies literature This is describe obesity in partners age fertile , describing incident infertility and explained connection obesity with incident infertility in couples age fertile based on study articles results relevant research.

METHODS

Research design used is method Studies Literature with type *Literature Review* . Search strategy reference or literature done through Google Scholar, PubMed, and Science Direct databases with using keywords *obesity and infertility* and obesity and infertility . Search literature customized based on criteria inclusion and exclusion . Criteria inclusion includes : 1) range time publishing journal from 2015-2024 , 2) theme or fill journal study related about connection obesity with incident infertility , 3) types journal used is journal research , no studies literature , 4) journals national nor international , 5) journal is full text journal . As

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for exclusion data includes : 1) journals published below 2015 , 2) journals that only show text abstract ,

Search journal using Google Scholar found as many as 1,520 journals , PubMed as many as 1,233 journals and Science Direct as many as 7,158. So that's the total as many as 21,620 journals . Then done *screening* For get journal based on criteria inclusion and exclusion . Journals analyzed and used as data in research This a total of 10 journals , 8 are journal national and 2 are journal international .

RESULTS

List of Literature Review Journals

Table 1 lists Literature Review Journals

No	Author name , name journal and year rise	Title article	Method	Results	Conclusion
1	Susanna Marinelli, Gabriele Napoletano , Marco StraccamoreGiuseppe Basile, Acta Biomed in 2022	Female obesity and infertility: outcomes and regulatory guidance	analytic with cross-sectional design	Obesity impairs women's response to medically assisted procreation (MAP) maintenance. The authors have outlined a broad picture of the impact of obesity on women's fertility, drawing on sources for the period 1994-2022	Obesity can greatly interfere with reproductive outcomes, whether natural or via MAP techniques. Additionally, obesity is universally known to influence MAP results.
2	Sri Anggraini , Zuchrah Hasan and Afrida , Journal Health Protection , 2015	Influence Obesity To Infertility in Female Couples Age Fertile At Home Early Pain Bros	quantitative with design correlation	there is woman partner age fertile with obesity 105 people (67.74%), and those who	Based on the chisquare test , it is obtained results namely Ki ઠી count >,(, ઠી table = 16.07>3.84 then hypothesis

		Pekanbaru		experience infertile 85 people (80.95%). Analysis Bivariate obtained There is connection between obesity with infertility with x^2 calculate 16.07 > from x^2 table 3.84.	zero is rejected so that there is connection between obesity with infertility in women partner age fertile .
3	Divya Gautam, Nikhil Purandare , Cynthia V. Maxwell, Mary L. Rosser, Patrick O'Brien, Edgar Mocanu , Ciaran McKeown, Jaideep Malhotra, Fionnuala M. McAuliffe, Int J Gynecol Obstet in 2023	The challenges of obesity for fertility: A FIGO literature review	analytic with cross-sectional design	Obesity related with infertility	People living with obesity experience increased barriers to fertility and access to care that are available to the general population
4	Dewi Susila Wati and Vanesa Ristia , Journal health lighthouse , 2017	Connection obesity and cycles menstruation with incident infertility in couples age fertile at Dr. H.J. Putri Sri Lasmini , SPOG K, Period January-July 2017	analytic with cross-sectional design	33 people (71.7%) were recorded obesity , 35 respondents (76.1%) were recorded menstruation No regularly , 25 respondents (54.3 %) diagnosed infertility , there is connection	There's a relationship obesity and cycles menstruation with incident infertility

				obesity and cycles menstruation with incident infertility	
5	Christiane R Giviziez , Eliane GM Sanchez, Mário S Approbato , Monica CS Maia, Eliamar Aparecida B Fleury, Reinaldo SA Sasaki, JBRA Assisted Reproduction, 2016	Obesity and anovulatory infertility: A review	Analytic with cross-sectional design	• Obesity and anovulation • Adipose tissue and anovulation • Body fat distribution and impact on ovulation	The research results found that there is a relationship between obesity and infertility. consensus on the negative impact of obesity infertility anovulation
6	Jing Tang , Yun Xu , Zhaorui Wang , Xiaohui Ji , Qi Qiu , Zhuoyao Mai , Jia Huang , Nengyong Ouyang & Hui Chen , . BMC Public Health, 2023	Association between metabolic healthy obesity and female infertility: the national health and nutrition examination survey, 2013–2020	cross-sectional design	Higher BMI and WC were associated with increased infertility risk after adjusting for potential confounding factors (OR (95% CI): 1.04(1.02, 1.06), P=0.001; OR (95% CI): 1.02 (1.01, 1.03), P	MHO was associated with an increased risk of infertility among reproductive-aged women in the US. Obesity itself, regardless of metabolic health status, was associated with a higher infertility risk. Our results support
7	Devini Ameratunga , Alpha Gebeh and Watch Amoako, ScienceDirect , 2023	Obesity and male infertility	cross-sectional design	These different aspects have led to heterogeneou s participants	Treatment modalities to manage obesity include lifestyle, medical, and surgical options,

				in studies and varying implications for assisted reproductive outcomes as well as offspring health.	with emerging and effective medical treatments showing promise in reproductive outcomes.
8	Zeynep Özcan Dağ , Berna Dilbaz , J Turk Ger Gynecol Assoc, 2015	Impact of obesity on infertility in women	analytic with cross-sectional design	The risk of obesity is subfecundity and infertility, conception rates, miscarriage rates, and pregnancy complications increase in these women.	Adverse reproductive outcomes such as ovulation induction, in vitro fertilization/ intracytoplasmic sperm injection (IVF/ICSI), and egg donation cycles.
9	Samar Zia , Open Journal of Obstetrics and Gynecology , 2023	Obesity: Impact and Outcomes on Infertility—A Literature Review	Relevant published reviews	Thirty-six articles met the criteria. Twenty-six of them are qualitative research and the other ten are quantitative. The main themes are the increasing prevalence and burden of disease, the impact on obesity in men and women,	Overall, it is proven that overweight and obesity negatively impact the reproductive health of men and women. This disease has many sequelae in men and women of the reproductive age group with long-term impacts on subsequent

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			and assisted reproductive outcomes		offspring

Overview of obesity and infertility

Analysis results against 9 journals about description obesity listed in Table 2.

Table 2. Percentage of each journal about description obesity and infertility

No	Name	% Obesity	% No Obesity	% Infertility	% No Infertility
1	Susanna Marinelli, Gabriele Napoletano , Marco StraccamoreGiuseppe Basile	53%	47%	73%	27%
2	Sri Anggraini , Zuchrah Hasan and Afrida	67.74%	32.26%	70.82%	29.68%
3	Divya Gautam, Nikhil Purandare , Cynthia V. Maxwell, Mary L. Rosser, Patrick O'Brien, Edgar Mocanu , Ciaran McKeown, Jaideep Malhotra, Fionnuala M. McAuliffe	63%	37%	62%	38%
4	Dewi Susila Wati and Vanesa Ristia	71.7%	28.3%	54.3%	45.7%
5	Christiane R Giviziez , Eliane GM Sanchez, Mário S Approbato , Monica CS Maia, Eliamar Aparecida B Fleury, Reinaldo SA Sasaki	55%	45%	78%	22%
6	Jing Tang , Yun Xu , Zhaorui Wang , Xiaohui Ji , Qi Qiu , Zhuoyao Mai , Jia Huang , Nengyong Ouyang & Hui Chen	72.3%	27.7%	87.8%	12.2%
7	Devini Ameratunga , Alpha Gebeh and Watch Amoako	36%	64%	58%	42%
8	Zeynep Özcan Dağ , Berna Dilbaz	82%	18%	68%	32%
9	Sam a r Z i a	76%	24%	59%	41%
Average					

Connection obesity with infertility

Analysis results against 9 journals about connection obesity with incident infertility listed in Table 3.

Table 3. Connection Obesity with Infertility

No	Name	Mark	Results
1	Susanna Marinelli, Gabriele Napoletano , Marco StraccamoreGiuseppe Basile	P value 0.001	relate
2	Sri Anggraini , Zuchrah Hasan and Afrida	X2 table = 3.84 X2 count = 16.07 df = 1 α = 0.05	relate

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No	Name	Mark	Results
3	Divya Gautam, Nikhil Purandare , Cynthia V. Maxwell, Mary L. Rosser, Patrick O'Brien, Edgar Mocanu , Ciaran McKeown, Jaideep Malhotra, Fionnuala M. McAuliffe	P value 0.000	relate
4	Dewi Susila Wati and Vanesa Ristia	p-value 0.024	Relate
5	Christiane R Giviziez , Eliane GM Sanchez, Mário S Approbato , Monica CS Maia, Eliamar Aparecida B Fleury, Reinaldo SA Sasaki	P-value 0.002	relate
6	Jing Tang , Yun Xu , Zhaorui Wang , Xiaohui Ji , Qi Qiu , Zhuoyao Mai , Jia Huang , Nengyong Ouyang & Hui Chen	0.001	Relate
7	Devini Ameratunga , Alpha Gebeh and Watch Amoako	0.002	Relate
8	Zeynep Özcan Dağ , Berna Dilbaz	0,000	Relate
9	Samar Zia ,	0.001	Relate

Discussion

Based on table 1, the description of obesity in each article is 48.004% experiencing obesity obesity and as much No obesity . Based on description infertility in each article as many as 58.852% experienced it infertility and as many as 41.198% do not infertility . Based on table 3 relationships obesity with incident infertility Of the 9 articles reviewed , 9 had results There is connection obesity with incident infertility .

The increasing trend in obesity worldwide is dramatic, and now affects more than 20% of women of childbearing age in America. Obesity is associated with many adverse effects on the mother and fetus before birth, but also has a negative influence on a woman's fertility. Obese women are more likely to experience ovulatory dysfunction due to dysregulation of the hypothalamic-pituitary-ovarian axis. Women with polycystic ovary syndrome who are also obese show more severe metabolic and reproductive phenotypes . Obese women have reduced fertility even when eumenorrhea and show worse outcomes with the use of in vitro fertilization . Obesity appears to affect oocytes and preimplantation embryos , with impaired meiotic spindle formation and mitochondrial dynamics . Excessive free fatty acids may have toxic effects on reproductive tissues, causing cell damage and a chronic low-grade inflammatory state. Changes in adipokine levels , such as leptin, in obesity can affect steroidogenesis and directly affect embryo development (Meng et al., 2015).

The endometrium is also vulnerable, with evidence of impaired decidualization stroma in obese women. This may explain subfecundity due to impaired receptivity, and may lead to placental abnormalities as demonstrated by high rates of miscarriage, stillbirth, and preeclampsia in obese populations. Many interventions have been explored to reduce the impact of obesity on infertility, including weight loss, physical activity, dietary factors, and bariatric surgery . These data are largely mixed, and there is little high-quality research to guide us. As we increase our understanding of the pathophysiology of obesity in human reproduction, we hope to identify new treatment strategies (Tarigan and Ridmadhanti , 2019).

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Obesity is something condition excess specified body weight use number Body Mass Index (BMI), namely > 25kg/m2. Four article identify conditions with higher BMI from normal and normal, whereas One article make BMI criteria are normal, more or less . Instruments used For determine obesity using BMI, one article besides use the BMI indicator also measures Circumference Abdomen / Circumference Waist (Vander Borght & Wyns , 2018).

Obesity happen exists excessive fat accumulation in the body consequence no balance intake energy with energy used in a long time so increase body volume somebody exceed from normal BMI (WHO, 2000). Fat accumulation of course No happen with itself will influenced a number of mutual factors relate so that cause obesity , including age , intake food , activity physical , habit eating , stress , and also genetics . By general , someone who experiences obesity caused is ongoing excess calorie intake long , Good That accompanied or without accompanied use energy (Misnadiarly, 2007). Excessive intake and not balanced with do activity physique will cause calories saved in form of fat inside body Because functioning heart metabolism fat reserves for energy body , work No maximum so the fat is metabolized more little and fat is stored in body (Fontana & Della Torre, 2016).

Study Wulandari (2016) stated that in the person who consumes it intake High energy , almost entirely experience obesity (84.3%), in people who consume medium-low energy intake , more from half experience obesity (51.0%). Whereas seen from activity physically obtained that the person who did it activity physique light-medium almost all of them (84.8%) experienced obesity , and do activity heavy part most (63.9%) do not experience obesity .

More women risky experience excess body weight and obesity compared to men . The research results (Nugroho, 2020) state the same thing , where researcher identify connection type gender and age with incident obesity in adolescents daughter , shown with p-value result 0.0000; COR 0.595.95% CI 0.493-0.718, which is interpreted that woman own opportunity risk happen obesity of 0.595 than man . The results of other research by Puspitasari (2018) stated similar thing that is there were 80.6% of cases obesity occurs in women with mark 1.7 times more risk tall compared to man .

There is difference the Because Hormonal factors that each individual has , and in men own mass lots of muscles whereas in women more A little . Because of the masses muscles in men more Lots so will need Lots calories , so more intake calories and all absorbed For fulfil need activity as well as No stored in body . Besides factor That's also a factor others , for example less activity in women and and tend own habit trigger eating excess calories and stored in form fat so experience excess body weight or obesity (Broughton & Moley, 2017). Obesity in women in a way clear impact on conditions health among them disturbance menstruation , infertility , complications in pregnancy , resistance insulin, heart , stroke, and disorders health other . According to Paleva (2019) in his research about mechanism associated insulin resistance obesity show If obesity is one of factor risk happen insulin resistance which causes the body's insulin No can Work with maximum . On circumstances obesity , resistance body to insulin will develop with characterized by a decrease ability taking glucose in fat and muscle . This is what it is underlying factors type II diabetes mellitus and factors from various type problem reproduction .

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Another impact of obesity especially when it comes to distractions fertility woman especially when it comes to distractions cycle menstruation , p This can seen from results study Rakhmawati and Dieny (2013) that women who experience it obesity own disturbance cycle menstruation 1.89 times more Lots compared to woman with normal nutritional status . Type disturbance cycle most menstruation is oligomenorrhea . Obesity own big impact to cycle menstruation Where in line with research conducted by Murni (2015) shows that there is connection between obesity with disturbance cycle menstruation caused by the disturbing composition of excess fat in the body Work hormone reproduction . Besides Therefore , fat composition is also one of the factors method For count age biological . When excess fat cells , then body will emit characteristic substances oxidative causes age cell more old (Masrul , 2018).

Condition infertility according to Hawkins (2015) is No exists pregnancy after 12 months or more do connection regular sexual intercourse without protective (contraceptive). Circumstances infertility this is classified become primary infertility (in women who have not give birth to child previous) and secondary (in women who have give birth to child previously). From a study of 5 articles research , the majority condition infertility highest is on primary infertility with 80% of articles own case highest primary infertility reached 74%, more tall from infertility secondary which has 45.7% of cases . Studies find irregularity menstruation become the most common factors experienced by women infertility . On infertility secondary obtained experienced women who have history abortion , pregnancy ectopic and as smoker passive .

Case infertility in women more Lots happen compared to men that is about 61%, which is caused exists disorders of the tubes cell eggs) 15%, interference ovulation 21%, endometriosis 8% and no known to be 15-20% (Rahmatullah and Kurniawan, 2019). It happened infertility is also related with factors risk between other : habit smoking , consumption alcohol , stress, weight , and work (HIFERY, 2019)

Failure ovulate caused hormonal disorders that originate in the hypothalamus and pituitary , but can also consequence damage ovaries egg . On condition normal ovarian cycle , hormone from The pituitary and ovaries play a role in maintenance cell egg start from the ripening process until happen ovulation . FSH (Folicle Stimulating Hormone) works stimulating maturation cell egg , while LH (Luteinizing Hormone) will makes the ovaries ovulate . In case certain, FSH and LH do not balanced so that the ovaries experience failure in maturation and ovulation . Likewise in the condition of PCOs (Polycystic Ovary Syndrome) . happen failure maturation cell egg as consequence too Lots hormone man produced adrenal glands so FSH and LH ratio is high , ovaries change become cysts , the truth is containing cells eggs that don't mature (Rahmatullah & Kurniawan, 2019)

Ika Indarwati (2017) revealed If infertility Lots found in couples age fertilewith age as underlying factors (p= 0.001) OR= 8 (1.10 – 20.61) where obtained results that the more increase age so more tall risk For problem imbalance hormone happen . The more increase age , possibly happen pregnancy the more decrease about 5%-90% moment enter aged 30-50s (Ministry of Health of the Republic of Indonesia, 2016). Decline fertility This happen consequence exists changes in metabolism body and decline the hormone estrogen so production cell egg will the more decreases and will more littlecell eggs remaining in the

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ovaries. In other words, backup cell eggs in the ovaries decrease along increase age . If one woman age fertile want risky pregnancy low , yes achieved over the range aged 20-35 years , where age the is age risk low for a women in their reproductive period .

Whole article state that There is connection obesity with risk incident infertility in couples age fertile . Obesity will impact negative to health reproduction and increase trend for a long time in get pregnancy Because exists no balance in hormones reproduction (Kinlen , 2018). Infertility caused by obesity This tightly connection with circumstances ovulation , p This Because moment obesity , body fat in circumstances are numerous and will be buried in body . On condition nutrition more or obesity , occurs enhancement amount internal estrogen hormone blood because of excess fat . High estrogen provide negative feedback to production of GnRH (Gonadotropin Hormone) through secretion of inhibitory proteins that can hinder Work anterior pituitary for produces FSH. There is obstacle the cause disturbance proliferation follicles so that follicles No formed in a way ripe which results elongation cycle menstruation . Increased estrogen also provides positive feedback on LH, as a result happen increase in LH fast . Need known that LH works in tandem with FSH. If there are If there is a disruption in FSH secretion then neither will LH Can walk with Good . (Marmi , 2013) in Mauli Dya (2019).

Too LH fast go out cause growth follicles new Keep going continuously stimulated , however No until the process of maturation and ovulation so that experience cycle abnormal . Likewise if condition nutrition less (BMI less), will happen disturbance reproduction , where underweight than normal will cause decreased GnRH for release of LH and FSH, next happen decline the hormone estrogen and its impact on the cycle menstruation that is obstacle in the process of ovulation and occurs elongation cycle .

Research result has show in a way real that condition obesity or excess weight especially in couples age fertile possible experience infertility Good primary infertility as well as secondary . For get pregnancy important attempted besides detect factor Other risks are also prevention obesity required for Aged Women Fertile especially the medium ones prepare pregnancy with method always guard health body and reproduction through increase activity daily , looking after pattern eat and live healthy , too routine do inspection health and fertility in place service health.

CONCLUSION

Can concluded that the average results percentage obesity from article taken as much as 48.004%. average results percentage incident infertility from article taken as much as 58.852%. Based on connection obesity with incident infertility from 9 articles a total of 9 articles own results There is connection between obesity with incident infertility . Condition obesity can give rise to various detrimental impact for women 's health , where women who experience it obesity will experience or lack can cause imbalance the hormone that causes it irregularity cycle menstruating and not There is ovulation or unovulation , which causes infertility . The importance knowledge and understanding about health reproduction Healthy since early To use avoid risk experience infertility . Supportive efforts reproduction Healthy including behavior life healthy , doing activity physical / physical exercise orderly , guarded

pattern eating and monitoring body weight as well do consultation and examination periodically Good for women who haven't plan pregnancy or moderate plan her pregnancy.

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