



Systematic Review

Obesity and Stunting in Childhood. Do Grandparents Play A Role? A Systematic Review**Rizki Agustin Purwaningtyas, Ardila Lailatul Barik and Dwi Astuti**

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ABSTRACT

Introduction: Obesity and stunting in childhood has become one of the greatest global health challenges. The impact of this issue is serious and lasting for individuals, their families, communities and countries. Most of the studies on child weight status have only focused on the mother as the primary caregiver, whereas the role and influence of the grandparents has received less attention. Grandparent-provided child care has become a trend in many countries, with reported rates of approximately 40% to 58%. The objective of this systematic review was to analyze whether children become stunted or obese when they are cared for by their grandparents.

Methods: The methodological search of the literature was conducted using Scopus, Science Direct, PubMed, Pro Quest and ResearchGate, and it was undertaken using PRISMA guidelines. The search identified 1803 papers and 135 full-text articles were screened for eligibility. Finally, 15 met the inclusion criteria. The keyword chain was as follows: ("obesity" OR "stunting") AND ("children") AND ("grandparents").

Results: As grandparents take on increasingly responsible roles in the lives of their grandchildren, there is an influence on the higher risk of child obesity rather than stunting.

Conclusion: In future, nurses should target not only the mother but also the grandparents to control their child's health, especially when related to their weight status.

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INTRODUCTION

The increasing rate of overweight and obesity is faced in many developing countries, though undernutrition is still prevalent in these countries as well. This coexistence of overnutrition and undernutrition is often referred to as the double burden of malnutrition (Sekiyama, Jiang, Gunawan, Dewanti, & Honda, 2015). If immediate action is not taken, then countless numbers of people will develop an array of serious, chronic and costly health disorders. Unlike undernutrition, overnutrition has multifaceted, clustered effects that result in disability and disease, which creates a significant burden for both families and the healthcare system. Because of their smaller stature, children who grow up with a state of malnutrition are at a greater risk of being overweight

(weight related to height) as adults (Walrod et al., 2018).

Most of the studies on child weight status have only focused on the mother as the primary caregiver. Little rigorous research has been performed that focuses primarily on the influence of the grandparents on child dietary intake and weight status. The trend towards grandparent-provided child care applies internationally, with reported rates of grandparental caregiving being approximately from 40% (Geurts, Van Tilburg, Poortman, & Dykstra, 2015) and up to 58% (Bordone, Arpino, & Aassve, 2015). In 2010, 66.5% of mothers were engaged in some level of employment, and with this, there has been an increasing call on the grandparents to assist with 'informal' childcare (Wellard, 2011). As the grandparents take on increasingly responsible roles in the lives of their grandchildren, it could reasonably

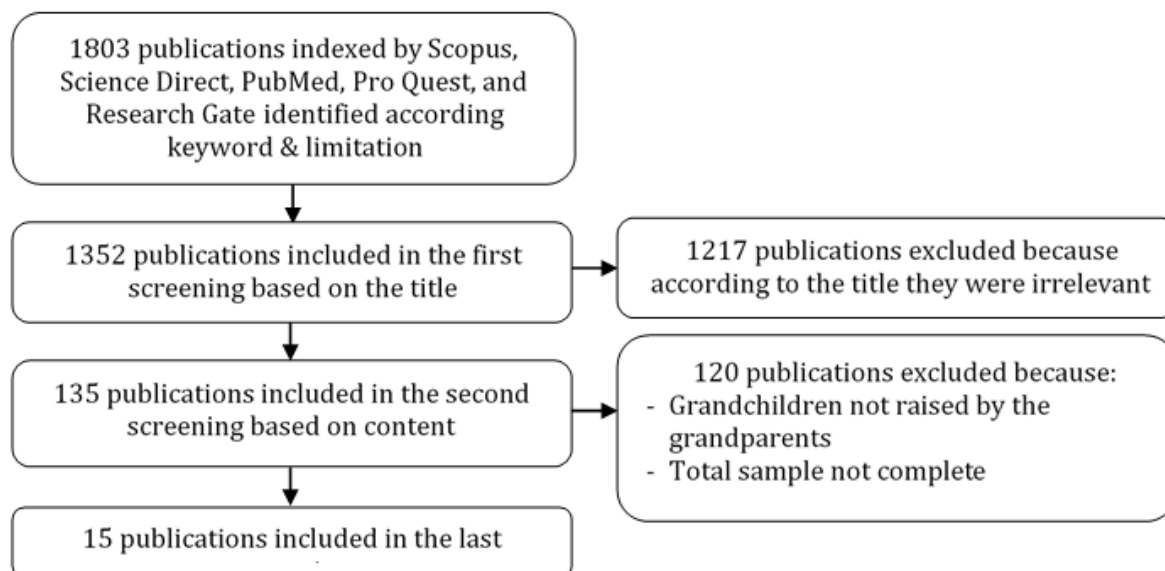


Figure 1. Results and selection procedure

be assumed that their attitudes, beliefs and feeding practices may have a similarly significant influence on child dietary intake and weight status (Young, Duncanson, & Burrows, 2018).

The objective of this systematic review was to analyze whether children become stunted or obese when they are cared for by their grandparents. Who is affected by the grandparent being the caregiver more – is it the boys or girls? How old is the child when their weight status is influenced by the grandparent’s provided care? Who is the most common caregiver of the child; the grandparents only or the grandparents with others?

MATERIALS AND METHODS

The study began with a systematic literature search. The next step was to determine the keyword chains, and two components were used as the search terms to identify studies on ‘Obesity and Stunting in Childhood’ and ‘Do The Grandparents Play A Role?’: (1) grandparents and stunting, (2) grandparents and obesity. The results of this keyword formulation were used to find the relevant literature in 5 databases (Scopus, Science Direct, PubMed, Pro Quest, and Research Gate). The keyword chain was as follows: ("stunting or obesity") AND ("grandparents").

The first screening was based on the titles and abstracts. At this stage, the publication was considered to be potentially relevant if the title and abstract had a link to the review topic. Articles that met the inclusion criteria were selected for all content. The selected articles totaled 15. This type of analysis requires themes that are relevant to the purpose of the review. The theme groups used for the review and for this form of analysis were: (1) grandparents only or with another caregiver, (2) age of children, (3) gender, and (4) body weight. The

limitation regarding publication year was that it had to be between 2015 and now. The only type of document selected was articles. The search results concluded on February 20th, 2019 with a keyword chain and limitation criteria, and it obtained 1803 articles. Various inclusion and exclusion criteria were applied; the publications must be in English, the number of qualitative research samples had to be >12 and quantitative >100 and the research sample must be children aged above or below the age of 5 who were cared for by their grandparents. Articles that were only a trial and that did not contain written results were not included.

RESULTS

The search results used a predefined keyword chain that generated 1803 publications. The screening results have been presented in the figure below. In the first screening, 1352 publications were excluded after reading the titles based on the inclusion / exclusion criteria. In total, 135 publications were included in the second screening. For the second screening, the publication was downloaded. Of the 135 articles, 120 publications were excluded after reading the full text. The reasons for exclusion were: (1) grandchild are not cared for by the grandparents; (2) the number of samples not meeting the minimum; (3) a combination of the reasons above. After the second screening, 15 publications were selected for the systematic review. A detailed description of the publications has been presented in the Appendix.

The results of the review illustrate that as many as 73.3% have excess weight or are obese when they are cared for by their grandparents. Obese children who were cared for by their grandparents were under the age of 5 years making up a percentage of 40.0% while the children who were stunted made up only 26.7%.

Table 1. Description of the relevant publications according to the analysis criteria

Classification	Sub Category	Total (%)	Reference index (appendix 1)*
Publication year	2019	2 (13.3)	4, 15
	2018	7 (46.7)	1,2,3,7,8,11, 14
	2017	3 (20.0)	5,10, 13
	2016	1 (6.7)	6
	2015	2 (13.3)	9,12
Body weight	Obesity	11 (73.3)	1, 3, 4, 8, 9, 10, 11, 12, 13, 14, 15
	Stunting	4 (26.7)	2, 5, 6, 7
Children's age	Children aged <5 years	5 (33.3)	8, 9, 11, 13, 14
	Obesity	Children aged > 5 years	6 (40.0)
Stunting	Children aged <5 years	4 (26.7)	2, 5, 6, 7
	Children aged > 5 years	0	0
Children's sex	Boy	1 (6.7)	3
	Obesity	Girls	0 (0)
Stunting	Both boy and girl	3 (20.0)	1, 10, 15
	Not mentioned	7 (46.7)	4, 8, 9, 11, 12, 13, 14
	Boy	1 (6.7)	2
	Girls	1 (6.7)	6
Caregiver	Both boy and girl	0 (0)	0
	Not mentioned	2 (6.7)	5, 7
	Grandparents	6 (40.0)	1, 3, 4, 8, 10, 15
Obesity	Grandparents and others	5 (33.3)	9, 11, 12, 13, 14
	Grandparents	1 (6.7)	2
Stunting	Grandparents and others	3 (20.0)	5, 6, 7
Age of caregiver	< 45 years old	0 (0)	0
	Obesity	>45 years old	1 (6.7)
Stunting	Not mentioned	10 (66.7)	1, 4, 8, 9, 10, 11, 12, 13, 14, 15
	< 45 years old	0 (0)	0
	>45 years old	2 (13.3)	2, 7
	Not mentioned	2 (13.3)	5, 6
Sex of caregiver	Male	0 (0)	0
	Obesity	Female	3 (20.0)
Stunting	Not mentioned	8	1, 4, 8, 9, 10, 12, 13, 15
	Male	0 (0)	0
Obesity	Female	3 (20.0)	2, 5, 7
	Not mentioned	1	6

*complete appendix available on supplementary file

However, the results of the reviewed journals did not specifically explain the sex of children who were potentially obese or stunted; 40.0% of children who were cared for by their grandparents were obese while the children who experienced stunting when cared for by their grandparents made up only 20.0%. The age of the caregivers that potentially influence their grandchildren to be obese was not specifically mentioned with a percentage of 66.7% while 13.3% of children potentially faced stunting when cared for by a caregiver aged more than 45 years old. By 53.3%, the sex of the caregiver in the articles that were reviewed was not mention specifically.

DISCUSSION

This systematic review discussed the relation between malnutrition (stunting and obesity) and being cared for by their grandparents. Fifteen articles have been reviewed. The limitations of this study are that most of the studies didn't mention the age and gender of the grandparents. So the researcher didn't know how old the grandparents who cared for their children were and if they were a grandfather or grandmother.

The results of this review show that the percentage of obesity is more often than the incidence of stunting in children who were cared for by their grandparents. Obesity can occur because the energy intake from food exceeds the children's energy requirements. Grandparents have inappropriate perceptions related to nutrition in children (they assume that obese children are healthier and well cared for). Grandparents usually over-indulge their grandchildren including overfeeding them. Children thus consume more unhealthy snack and sugar-added drinks (UNICEF; WHO; The World Bank, 2015; (Li, Adab, & Cheng, 2015).

The classification of child age in this study showed that children who were more than five years old had the potential of facing obesity. This finding is the same as the research conducted by (Lau, Au, Chao, Elbaar, & Tse, 2018) that showed that school-age (>5 years old) and adolescent children with grandparental care were more likely to be overweight and that there was no increased risk of being overweight or obese in the preschool group (<5 years old)(Lau et al., 2018).

The study found that most of the articles did not mention the gender of the child who had the potential to be obese or stunted. This finding is in line with the

research (Maruf, Aronu, Chukwuegbu, & Aronu, 2013) stating that there was no gender difference in the prevalence of obesity from childhood through to adolescence. In conclusion, BMI is larger in males in early childhood but larger in females during adolescence. Another study (Lau et al., 2018) also showed that there was no significant association between the sex of the child and having their grandparents as caretakers.

Review's classification by the caregiver indicated that grandparent was the most caregiver who influence children become obesity. This is in accordance with a previous study (He, Li, & Wang, 2018) that showed that the coresidence of grandparents can affect childhood weight outcomes. First, grandparents, especially in rural areas, often consider overweight babies as being healthy and lean babies as malnourished, as they lack health-related (particularly nutrition-related) knowledge. Therefore, they tend to overfeed their grandchildren. Second, most Chinese grandparents experienced low weight, malnutrition, food shortages, physical hardships and other deprivation in their early lives (Li, Adab, & Cheng, 2015).

Most of the articles in this review did not mention the age of the caregiver. Based on a previous study, this review suggests that the grandparents should not be too young. A possible explanation is that when the grandparents are very young and still reproductive themselves, they have to put their energy into running their own households and they have less possibility to take care of their grandchildren (Schrijner & Smits, 2018).

This review found that most of the articles that were reviewed did not mention the specific gender of the grandparents. But one study (Schrijner & Smits, 2018b) showed the result that grandfathers are less involved in household work and in helping their daughters(-in-law) with caring and feeding tasks. Compared to the grandmothers, grandfathers are probably more focused on the future achievements of their grandchildren in society. This does not mean that the grandfathers are not important to their grandchildren but their role might differ from that of the grandmother (Schrijner & Smits, 2018).

CONCLUSION

This systematic review found that co-residence of grandparents can affect children obesity. Community health nursing must include the grandparents and other caregivers of the child when it comes to giving them information such as education about how to keep their children body weight in normal range.

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