

WILEY

# PHN

## PUBLIC HEALTH NURSING

A JOURNAL OF POPULATION BASED NURSING



POPULATIONS AT RISK ACROSS THE LIFESPAN  
CLINICAL CONCEPTS

HEALTH POLICY

LAW & ETHICS

EDUCATION

METHODS

THEORY

HISTORY

Discover this journal online at  
**Wiley Online Library**  
[wileyonlinelibrary.com/journal/phn](http://wileyonlinelibrary.com/journal/phn)

## Editor

Patricia J. Kelly, PhD, MPH, APRN  
Tucson, AZ

## Assistant Editor

Amanda Emerson, PhD  
Kansas City, MO

## Editorial Advisory Board

Ann H. Cary, PhD  
Kansas City, MO

Butch De Castro, PhD  
Seattle, WA

Pam DeGuzman, PhD  
Charlottesville, VA

Alexandra Garcia, PhD  
Austin, TX

Carolyn Porta, PhD  
Minneapolis, MN

Donna M. Kazemi, PhD, FIAAN  
Charlotte, NC

Shawn Kneipp, PhD  
Chapel Hill, NC

Pamela A. Kulbok, DNSc, FAAN  
Charlottesville, VA

Emma Mitchell, PhD  
Charlottesville, VA

Chad Priest, JD  
Indianapolis, IN

Elizabeth Reifsnider, PhD  
Phoenix, AZ

David Reyes, DNP, MPH,  
Tacoma, WA

Kristen Welker-Hood, ScD  
Columbia, MD

Susan J. Zahner, DrPh, FAAN  
Madison, WI

Barbara J. Polivka, PhD, RN, FAAN  
Louisville, KY

## Editors Emeritae

Sarah E. Abrams, PhD  
Burlington, VT

Judith C. Hays, PhD  
Durham, NC

## Founding Editors

Katherine Young Graham, PhD, FAAN

Sherry L. Shamansky, DrPH, FAAN

The cover symbol, commissioned in 1913 by Lillian Wald, represents universal brotherhood. We thank the Henry Street Settlement and the Visiting Nurse Service of New York for allowing us to use a symbol they shared.

**PUBLIC HEALTH NURSING** (Print ISSN: 0737-1209; Online ISSN:1525-1446) is published bimonthly by Wiley Subscription Services, Inc., a Wiley Company, 111 River St., Hoboken, NJ 07030-5774, USA.

Periodicals Postage Paid at Hoboken, NJ and additional offices.

**Postmaster:** Send all address changes to PUBLIC HEALTH NURSING, Journal Customer Services, John Wiley & Sons Inc., C/O The Sheridan Press, PO Box 465, Hanover, PA 17331, USA.

**Information for Subscribers:** *Public Health Nursing* is published bimonthly. Institutional subscription prices for 2019 are:

Print & Online: US\$1314 (US, excl. Canada & Mexico), US\$1314 (Canada & Mexico), US\$1960 (Rest of World), €1277 (Europe), £1006 (UK). Prices are exclusive of tax. Asia-Pacific GST, Canadian GST/HST and European VAT will be applied at the appropriate rates. For more information on current tax rates, please go to [www.wileyonlinelibrary.com/tax-vat](http://www.wileyonlinelibrary.com/tax-vat). The price includes online access to the current and all online back files to January 1st 2015, where available. For other pricing options, including access information and terms and conditions, please visit [www.wileyonlinelibrary.com/access](http://www.wileyonlinelibrary.com/access).

**Delivery Terms and Legal Title:** Where the subscription price includes print issues and delivery is to the recipient's address, delivery terms are **Delivered at Place (DAP)**; the recipient is responsible for paying any import duty or taxes. Title to all issues transfers Free of Board (FOB) our shipping point, freight prepaid. We will endeavour to fulfil claims for missing or damaged copies within six months of publication, within our reasonable discretion and subject to availability.

**PUBLISHER:** *Public Health Nursing* is published by Wiley Periodicals Inc., 350 Main St., Malden, MA 02148-5020.

**Journal Customer Services:** For ordering information, claims and any enquiry concerning your journal subscription please go to [www.wileycustomerhelp.com/ask](http://www.wileycustomerhelp.com/ask) or contact your nearest office.

**Americas:** Email: [cs-journals@wiley.com](mailto:cs-journals@wiley.com); Tel: +1 781 388 8598 or 1 800 835 6770 (Toll free in the USA & Canada).

**Europe, Middle East and Africa:** Email: [cs-journals@wiley.com](mailto:cs-journals@wiley.com); Tel: +44 (0) 1865 778315

**Asia Pacific:** Email: [cs-journals@wiley.com](mailto:cs-journals@wiley.com); Tel: +65 6511 8000

**Japan:** For Japanese speaking support, Email: [cs-japan@wiley.com](mailto:cs-japan@wiley.com)

**Visit our Online Customer Help** available in 7 languages at [www.wileycustomerhelp.com/ask](http://www.wileycustomerhelp.com/ask)

**Production Editor:** Eden Grace R. Santos (Email: [PHN@wiley.com](mailto:PHN@wiley.com))

**Advertising:** Karl Franz (Email: [kfranz@wiley.com](mailto:kfranz@wiley.com))

**Commercial Reprints:** Daniel Geary (Email: [dgeary@wiley.com](mailto:dgeary@wiley.com))

**Back Issues:** Single issues from current and recent volumes are available at the current single issue price from [cs-journals@wiley.com](mailto:cs-journals@wiley.com). Earlier issues may be obtained from Periodicals Service Company, 351 Fairview Avenue - Ste 300, Hudson, NY 12534, USA. Tel: +1 518 822-9300, Fax: +1 518 822-9305, Email: [psc@periodicals.com](mailto:psc@periodicals.com)

**Copyright and Copying:** © 2019 Wiley Periodicals, Inc. All rights reserved. No part of this publication may be reproduced, stored or transmitted in any form or by any means without the prior permission in writing from the copyright holder. Authorization to copy items for internal and personal use is granted by the copyright holder for libraries and other users registered with their local Reproduction Rights Organisation (RRO), e.g. Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923, USA ([www.copyright.com](http://www.copyright.com)), provided the appropriate fee is paid directly to the RRO. This consent does not extend to other kinds of copying such as copying for general distribution, for advertising or promotional purposes, for republication, for creating new collective works or for resale. Permissions for such reuse can be obtained using the RightsLink "Request Permissions" link on Wiley Online Library. Special requests should be addressed to: [permissions@wiley.com](mailto:permissions@wiley.com)

**Disclaimer:** The Publisher and Editors cannot be held responsible for errors or any consequences arising from the use of information contained in this journal; the views and opinions expressed do not necessarily reflect those of the Publisher and Editors, neither does the publication of advertisements constitute any endorsement by the Publisher and Editors of the products advertised.

**Abstracting and Indexing Services:** The Journal is indexed by Science and Social Science Citation Indexes, MEDLINE, SCOPUS, & CINAHL; for a complete list of A&I services, please visit the journal homepage at [www.wileyonlinelibrary.com/journal/phn](http://www.wileyonlinelibrary.com/journal/phn).

View this journal online at [www.wileyonlinelibrary.com/journal/phn](http://www.wileyonlinelibrary.com/journal/phn)

For submission instructions, subscription and all other information visit: [www.wileyonlinelibrary.com/journal/phn](http://www.wileyonlinelibrary.com/journal/phn)

*Public Health Nursing* accepts articles for Open Access publication. Please visit <http://olabout.wiley.com/WileyCDA/Section/id-828081.html> for further information about OnlineOpen.

Printed in Singapore by C.O.S. Printers Pte Ltd.

Wiley is a founding member of the UN-backed HINARI, AGORA, and OARE initiatives. They are now collectively known as Research4Life, making online scientific content available free or at nominal cost to researchers in developing countries. Please visit Wiley's Content Access - Corporate Citizenship site: <http://www.wiley.com/WileyCDA/Section/id-390082.html>

Wiley's Corporate Citizenship initiative seeks to address the environmental, social, economic, and ethical challenges faced in our business and which are important to our diverse stakeholder groups. Since launching the initiative, we have focused on sharing our content with those in need, enhancing community philanthropy, reducing our carbon impact, creating global guidelines and best practices for paper use, establishing a vendor code of ethics, and engaging our colleagues and other stakeholders in our efforts. Follow our progress at [www.wiley.com/go/citizenship](http://www.wiley.com/go/citizenship)

Digital Repository Universitas Jember  
**PUBLIC HEALTH NURSING**

JULY/AUGUST 2019, VOLUME 36, NUMBER 4

**EDITORIAL**

- 447 Education equity in nursing: A cornerstone of sustainable development goal attainment  
*William E. Rosa, Melissa T. Ojemeni, Viola Karanja, Graciela Cadet, Angeline Charles, Cory McMahon, and Sheila Davis*
- 449 Addressing the resurgence of measles and vaccine refusal in the United States through public health nursing  
*Midori Trojanowski, Emily Stanforth, Jane Hong, Robyn Khung, and Paula V. Nersesian*

**POPULATIONS AT RISK ACROSS THE LIFESPAN**

**Population Studies**

- 451 Care coordination to target patient complexity and reduce disparities in primary care  
*Arlene M. Miller, Kathryn D. Swartwout, Michael E. Schoeny, Matthew Vail, and Regina McClenton*
- 461 Reconciling opposing perceptions of access to physical activity in a gentrifying urban neighborhood  
*Krista Schroeder, Heather Klusaritz, Roxanne Dupuis, Ansley Bolick, Amy Graves, Terri H. Lipman, and Carolyn Cannuscio*
- 469 Isolated, small, and large hospitals have fewer nursing resources than urban hospitals: Implications for rural health policy  
*Jessica G. Smith, Colin M. Plover, Moira C. McChesney, and Eileen T. Lake*
- 478 Similarities and differences in the correlates of comorbidities in US male and female adult cancer survivors  
*So-Hyun Park, and Shiela M. Strauss*

**Program Evaluations**

- 488 The effects of wellness coaching on the wellness and health behaviors of early adolescents  
*Serife Zehra Altunkurek, and Hatice Bebis*
- 498 Asthma care coordination in schools by school nurses: An integrative literature review  
*Elif Isik, and Ismet S. Isik*
- 507 A qualitative assessment of a dog program for youth offenders in an adult prison  
*Hayden P. Smith, and Holly Smith*

**Case Studies**

- 514 Promoting Children Growth and Development: A community-based cluster randomized controlled trial in rural areas of Indonesia  
*Tantut Susanto, Rismawan Adi Yunanto, Hanny Rasny, Latifa Aini Susumaningrum, and Kholid Rosyidi Muhammad Nur*

**SPECIAL FEATURES**

**Clinical Concepts**

- 525 Intention to care for gay and lesbian patients and knowledge about homosexuality: A comparison of Taiwanese nurses in 2005 and in 2017  
*Yi-Chun Lin, Cheng-Fang Yen, Peng-Wei Wang, Yu-Te Huang, Yao-Mei Chen, Yu-Hsien Chuang, and Huei-Fan Hu*

**Health Policy**

- 534 Organizational commitment and quality of life at work among public health nurses in Israel  
*Anat A. Aharon, Batya Madjar, and Ilya Kagan*
- 541 Societal value of newborn screening for severe combined immune deficiency in Arkansas: An economic analysis  
*Laura H. Hays*
- 545 Policy analysis of access to and reimbursement for nonpharmacologic therapies for cancer-related fatigue  
*Dilorom Djalilova, Natalie Mandolfo, Ann M. Berger, and Mary E. Cramer*

**Theory**

- 551 Fostering positive spaces in public health using a cultural humility approach  
*Kathryn Allwright, Catherine Goldie, Joan Almost, and Rosemary Wilson*

**Education**

- 557 Supporting elder persons in rural Japanese communities through preventive home visits by nursing students: A qualitative descriptive analysis of students' reports  
*Riho Iwasaki, Kazuaki Hirai, Takayuki Kageyama, Tamae Satoh, Hiromi Fukuda, Hiromi Kai, Kiwa Makino, Kathy Magilby, and Sachiyo Murashima*

**Methods**

- 564 Comparison of the performance of the Beck Depression Inventory-II and the Center for Epidemiologic Studies-Depression Scale in Arab adolescents  
*Latefa Ali Dardas, Noordeen Shoaqirat, Hanzhang Xu, Amjad Al-Khayat, Suhad Bani Ata, Atef Shawashreh, and Leigh Ann Simmons*


**REVIEW SUMMARIES**

- 575 The role of telenursing in the management of diabetes: A systematic review and meta-analysis  
*Sa Yang, Qiuhuan Jiang, and Hongfang Li*

[wileyonlinelibrary.com/journal/phn](http://wileyonlinelibrary.com/journal/phn)

WILEY Berlin Boston London Melbourne Oxford Paris Tokyo

# Promoting Children Growth and Development: A community-based cluster randomized controlled trial in rural areas of Indonesia

Tantut Susanto MN, RN, PHN, PhD  | Rismawan Adi Yunanto RN, MN |  
Hanny Rasny RN, MN | Latifa Aini Susumaningrum RN, MN, PHN |  
Kholdid Rosyidi Muhammad Nur RN, MNS

Department of Community, Family, and Gerontic Health Nursing, Faculty of Nursing, University of Jember, Jember, Indonesia

## Correspondence

Tantut Susanto, MN, RN, PHN, PhD,  
Department of Community, Family, and Gerontic Health Nursing, Faculty of Nursing,  
University of Jember, Jl. Kalimantan 37  
Jember, Jawa Timur 68121, Indonesia.  
Email: tantut\_s.psik@unej.ac.id

## Funding information

Hibah Kelompok Riset Family and Health Care Studies, Departement of Research and Community Engagement of University of Jember for funding of Research Group Family Health Care Studies. DIPA Universitas Jember Tahun 2018.

## Abstract

**Objective:** This study examined the influence of the Promote Children's Growth and Development (PCGD) intervention on children's growth and development in rural areas in Indonesia.

**Design and Sample:** A community-based nonblinded cluster randomized controlled trial was conducted. Twelve clusters of villages were matched based on population and randomly assigned to intervention group (six clusters and 72 caregivers dyads) or control group (six clusters and 72 caregivers dyads) with inclusion criteria age 0–72 months and attending integrated health centers (Posyandu). The intervention was conducted for 14 weeks with caregivers.

**Measures:** The weight-for-age Z-score (WAZ), height-for-age Z-score (HAZ), weight-for-height Z-score (WHZ), and body mass index-for-age Z-score (BAZ) were calculated using World Health Organization Anthro-Plus version 1.0.3. A prescreening developmental questionnaire (PSDQ) measured the development of children before and after the intervention.

**Results:** The proportion of stunting of HAZ, wasting of WHZ, and deviation development of PSDQ were higher in the control group compared to the intervention group, respectively (22.2% vs. 37.5%), (9.7% vs. 4.2%), and (12.5% vs. 2.8%). Caregivers were more confident promoting children's growth and development after attending 12 sessions of the PCGD intervention.

**Conclusion:** The 12 session PCGD intervention is effective for promoting the growth and development of children of 0–72 months. The PCGD could be considered for implementation in community health centers.

## KEYWORDS

children, community-based intervention, development, growth

## 1 | INTRODUCTION

In the 17 Sustainable Development Goals (SDGs) from UNDP 2015, goal number two targets ending all forms of malnutrition by 2030, including by 2025 the internationally agreed target on stunting and wasting in children under 5 years (UNICEF, 2015). Based on the Indonesian National Basic Health Survey on 2013, the prevalence of underweight and stunting among under five children is 19.6% and 37.5%, respectively (Badan Penelitian dan Pengembangan Kesehatan, 2013). Nutrition-related factors, mainly sufficient energy and protein intake, contribute to about 45% of deaths in children under-5 years of age (WHO, 2018). Other factors such as safe drinking water, sanitation facilities and adequate hygiene (Adhikari, Khatri, Paudel, & Poudyal, 2017; WHO, 2015), and sufficient energy, and protein intake (Laurus et al., 2016) directly influence nutritional status in children. Related social factors are the age of the child, occupation of head of household, family size, father's education, diarrhea, acute respiratory infections, late breastfeeding initiation, first lactation squeeze, and lack of vaccination (Batiro, Demissie, Halala, & Anjulo, 2017; Geberselassie, Abebe, Melsew, Mutuku, & Wassie, 2018).

Parenting and its related feeding practices in the first 5 years of life are closely related to stimulating children's growth (Kiefner-Burmeister, Hoffmann, Zbur, & Musher-Eizenman, 2016; Mozaffari-Khosravi et al., 2016). These years are a critical developmental period in the formation of personality, sensing, thinking, language, speaking, and social behavior. In Indonesian society, families are strongly integrated into their community's social and cultural life (Susanto, Syahrul, Sulistyorini, Rondhianto, & Yudisianto, 2017). Health promotion interventions for addressing maternal and child health problem can be implemented through community empowerment in *Posyandu*

or Integrated Health Centers (Sandjaja et al., 2013) which have been implemented across Indonesia by the government. To address nutritional problems of young children, *Posyandu* provides anthropometrical observation, basic medical treatment, and, sometimes, additional complementary feeding and health education (Susanto et al., 2017).

The Promoting Children Growth and Development (PCGD) program was a community-based intervention which included mothers and their children attending a series of parenting classes. This article examined the influence of PCGD on child's growth and development among 0–72 months old children in rural areas in Indonesia.

## 2 | METHOD

### 2.1 | Study design

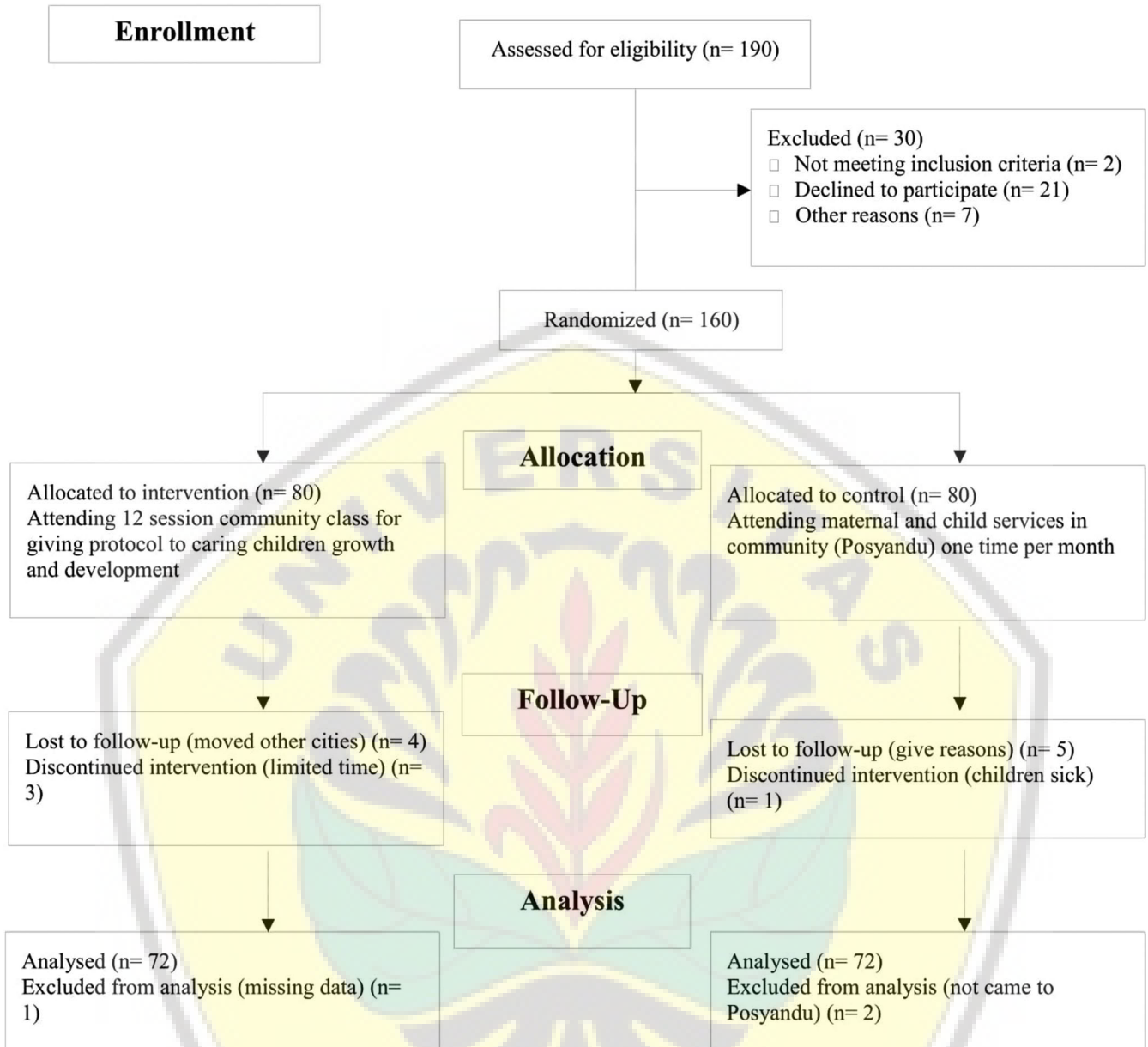
This study employed a nonblinded cluster randomized controlled trial design, applied to 0–72 months old children in rural areas of Jember, East Java, Indonesia. The study was approved by the Ethical Committee Review Board for Research No. 100/UN25.8/KEPK/DL/2018. Ethical and administrative approval from the Department of Political Unity for the Protection of the Public and the public health centers was obtained.

### 2.2 | Description of intervention

The PCGD intervention was conducted for 14 weeks, comprising 1 week of preintervention, 12 weeks of intervention, and 1 week of postintervention. PCGD intervention was done for children aged 0–72 months in six rural areas in Jember, East Java Province, Indonesia.

**TABLE 1** Schedule of Promoting Children Growth and Development (PCGD) through parenting class sections in the rural area during 14 weeks

| Weeks    | Description   |
|----------|---|
| Weeks 1  | Explanation of program and rules of learning process. After that, children underwent screening of height, weight, and development as preintervention program. Caregivers received hand book of maternal-child nursing as guidebook program. Then, caregivers and their children gave ice breaking and known of group's members. |
| Weeks 2  | Nutrition for children  |
| Weeks 3  | Immunization  |
| Weeks 4  | Breast feeding and complementary breast feeding   |
| Weeks 5  | Monitoring height, weight, and development  |
| Weeks 6  | Playing needs   |
| Weeks 7  | Posyandu  |
| Weeks 8  | Parent-child communication  |
| Weeks 9  | Parenting class   |
| Weeks 10 | Simulation for creativity of children   |
| Weeks 11 | Simulation for children development   |
| Weeks 12 | Caring for child sickness   |
| Weeks 13 | Schooling needs for child   |
| Weeks 14 | Screening of height, weight, and development of children postintervention program, then closing PCGD program  |



**FIGURE 1** CONSORT flow diagram for enrollment, allocation, and follow-up study participants

The PCGD program used the protocols and measures outlined in the 2016 Handbook of Maternal-Child Nursing of the Indonesian Ministry of Health (in Indonesian Language: *Buku Kesehatan Ibu dan Anak*) (Kemenkes, 2016). This handbook is a comprehensive guideline which contains information on early screening, simulation, detection, and intervention for children growth and development in Public Health Centers. This book also contains what the caregivers should do for caring their children aged 0-72 months to their best growth and development (Table 1). During the intervention program, the mother compiled the children's food menu by identifying local food sources that could be used for making complementary foods. In addition, mothers also learned how to fulfill the nutritional needs of breastfeeding mothers, breast care methods, and good breastfeeding techniques in order to stimulate good lactation production.

In parenting class meeting of Posyandu Plus, mothers learned to stimulate their children's development by always accompanying the children when playing and providing toys according to the children's age. Mothers also tried to manage the children's creativity abilities through communicating using their mother's language (locally language). Mothers introduced new objects to children by visual and verbal media, so that their children can feel, touch, and mention new objects by their recognition. The mothers also accompanied the toddler-aged children to early childhood education at the central location of local children.

### 2.3 | Participants

A multistage sampling was used to select children for this study. First, caregivers (mothers and their children) were selected using

purposive sampling technique from public health centers in six subdistricts located in rural areas. The six subdistricts were representative of the typical occupations, health and socioeconomic indicators for this study site. Information about the recruitment of the children was distributed using a flyer sent by the Public Health Centers to Posyandu in their working areas. A total of 190 children aged 0–72 months were initially identified for the study. The main inclusion criterion of children for the study was: children aged 0–72 months whose caregivers (mothers) had been registered in Posyandu in the six rural areas. The potential caregivers and their children met with team members in private rooms at the study sites. Based on inclusion criteria, 30 participants were excluded from the study (not meeting inclusion criteria = 2; decline to participate = 21, and others reason = 7). A total 160 of children participated in this study. The 160 children were randomly allocated to 12 clusters of the Posyandu community health centers, randomized by computer-generated number. The 12 clusters of villages were matched based on population and randomly assigned to intervention group (six clusters and 80 caregivers dyads) or control group (six clusters and 80 caregivers dyads).

During the intervention program, seven children were dropped from the intervention group (lost to follow-up/moved other cities = 4 and discontinued intervention/limited time = 3), while six children were dropped in control group (lost to follow-up = 5 and discontinued intervention/children sick = 1). At the end of study, data for three children were excluded from analysis, including one in the intervention (missing data) and two in the control (not come to Posyandu) group, respectively. Data from a total of children divided into two groups (72 of children in intervention and 72 of children in control group) were used and analyzed in this study (Figure 1).

## 2.4 | Measurement

A sociodemographic questionnaire identified age and gender of caregiver and their children, caregiver's education, occupation, and number of children at home. Anthropometric data were collected using digital weight scales and length boards (for under 24 months) or standing height scale (for 24–72 months). Measurement of weight and height used WHO guidelines (WHO, 2014).

The height, weight, and development of these children were recorded graphically in the monitoring handbook during the pre- and postintervention weeks of PCGD. Height-for-age Z-scores (HAZ), weight-for-age Z-scores (WAZ), weight-for-height Z-scores (WHZ), and body mass index (BMI)-for-age Z-scores (BAZ) were calculated using the WHO Anthro software version 1.0.3 (WHO, 2013). To classify children's nutritional status, criteria based on the national research of the Ministry of Health of Indonesia were used (Ministry of Health Indonesia, 2013). Nutritional parameter using growth standard (Z-score) for under five children from WHO (2006) was used to classified nutritional status. WAZ was classified into three categories, including severely underweight (Z-score < -3.0), underweight (Z-score  $\geq$ -3.0 to <-2.0), and normal (Z-score  $\geq$  -2.0). HAZ was classified into three categories, following: severely stunting

(Z-score < -3.0), stunting (Z-score  $\geq$ -3.0 to <-2.0), and normal (Z-score  $\leq$  -2.0). While, WHZ was divided into four categories, including: severely wasting (Z-score < -3.0), wasting (Z-score  $\geq$ -3.0 to <-2.0), normal (Z-score  $\geq$ -2.0 to  $\leq$ 2.0), and overweight (Z-score > 2.0).

For measuring children's development, we used the prescreening developmental questionnaire (PSDQ) from Frankenburg et al. (1976) which was developed and translated into Indonesian in 1996 and revised in 2005 as "Kuesioner Pra Skrining Perkembangan (KPSP)". KPSP has been recommended for early detection of developmental delay among children in public health centers (Dhamayanti, 2006). The reliability of KPSP was Kappa 0.82 among Cadre in health and Kappa 0.72 among Cadre in health and medical doctor (Kadi, Garna, & Fadlyana, 2008).

## 2.5 | Procedure

For the intervention group, participants attended Posyandu Plus. We modified the tradition Posyandu with adding 12 session of parenting class in Posyandu program. We used the handbook, which was first modified, to accommodate a 14 week intervention (1 week screening, 12 weeks intervention of parenting class, and 1 week for measuring post intervention). A 12 week PCGD program was organized through several planning, coordinating, and focused steps. The program was held in the Posyandu as scheduled two times each month (per 2 weeks). This program focused on how to care for children aged 0–72 months by their caregivers. The program was conducted through parenting class per 2 weeks supervised by a local public health nurse or midwife. The activities in this program were outlined in the handbook of maternal-child nursing program guidebook. Each participant was required to finish a 2-hour parenting class session every 2 weeks to learn about screening, stimulation, detection, and intervention of children growth and development in Posyandu (Table 1).

In the intervention group, the participants attended parenting class in the concept of Posyandu Plus. Posyandu Plus was integrated health centers which we improved their services with including parenting class meeting during of the intervention of study. We interviewed and informed the public health centers about the study, and then informed the participants (caregivers) about the study in their area. After obtaining consent from the participants, we measured the children's height, weight, and development as preintervention program in the first weeks. The program activities were explained to the participants in the first session. The caregivers and their children attended the 12 sessions to discuss the growth and development of the children aged 0–72 months in the second to 13 weeks. The intervention group met weekly in the PCGD program of 14 weeks. The children were engaged in a postintervention in the 14 sessions for measuring their height, weight, and development (KPSP). The outline of 14 week PCGD program is presented in Table 1.

Participants in the control group met monthly in the tradition Posyandu. The control group attended the maternal and child nursing program in Posyandu every month during 14 weeks as scheduled 3 months in Public Health centers. In the first month, the children's

**TABLE 2** Characteristics of participant (n = 144)

| Variable                               | Total n (%)      | Control<br>n (%) | Intervention<br>n (%) | Z/ $\chi^2$ | p-value |
|--|------------------|------------------|-----------------------|-------------|---------|
| Fathers' age (year)                    |                  |                  |                       |             |         |
| Md (P <sub>25</sub> -P <sub>75</sub> ) | 35.0 (29.0-41.0) | 34.5 (30.0-40.0) | 35.5 (28.2-42.7)      | -0.150      | 0.881   |
| Mothers' age (year)                    |                  |                  |                       |             |         |
| Md (P <sub>25</sub> -P <sub>75</sub> ) | 31.0 (24.0-36.0) | 30.5 (24.0-35.0) | 31.5 (24.0-36.0)      | -0.138      | 0.890   |
| Children's age (month)                 |                  |                  |                       |             |         |
| Md (P <sub>25</sub> -P <sub>75</sub> ) | 26.5 (12.0-37.7) | 31.5 (17.2-46.0) | 21.5 (10.2-33.7)      | -2.906      | 0.004*  |
| Fathers' occupation                    |                  |                  |                       |             |         |
| Government                             | 3 (2.1)          | 3 (4.2)          | 0                     | 3.412       | 0.332   |
| Farmer                                 | 46 (31.9)        | 24 (33.3)        | 22 (30.6)             |             |         |
| Entrepreneur                           | 77 (53.5)        | 36 (50.0)        | 41 (56.9)             |             |         |
| Temporary job                          | 18 (12.5)        | 9 (12.5)         | 9 (12.5)              |             |         |
| Fathers' education                     |                  |                  |                       |             |         |
| Not attended school                    | 1 (0.7)          | 0                | 1 (1.4)               | 5.196       | 0.268   |
| Elementary school                      | 43 (29.9)        | 21 (29.2)        | 22 (30.6)             |             |         |
| Junior high school                     | 44 (30.6)        | 23 (31.9)        | 21 (29.2)             |             |         |
| Senior high school                     | 49 (34.0)        | 27 (37.5)        | 22 (30.6)             |             |         |
| College/university                     | 7 (4.9)          | 1 (1.4)          | 6 (8.3)               |             |         |
| Mothers' occupation                    |                  |                  |                       |             |         |
| Farmer                                 | 2 (1.4)          | 0                | 2 (2.8)               | 5.007       | 0.171   |
| Entrepreneur                           | 4 (2.8)          | 2 (2.8)          | 2 (2.8)               |             |         |
| Mother household                       | 135 (93.8)       | 67 (93.1)        | 68 (94.4)             |             |         |
| Temporary job                          | 3 (2.1)          | 3 (4.2)          | 0                     |             |         |
| Mothers' education                     |                  |                  |                       |             |         |
| Not attended school                    | 2 (1.4)          | 0                | 2 (2.8)               | 6.478       | 0.116   |
| Elementary school                      | 55 (38.2)        | 29 (40.3)        | 26 (36.1)             |             |         |
| Junior high school                     | 42 (29.2)        | 21 (29.2)        | 21 (29.2)             |             |         |
| Senior high school                     | 35 (24.3)        | 20 (27.8)        | 15 (20.8)             |             |         |
| College/university                     | 10 (6.9)         | 2 (2.8)          | 8 (11.1)              |             |         |
| Children's gender                      |                  |                  |                       |             |         |
| Boys                                   | 72 (50.0)        | 34 (47.2)        | 38 (52.8)             | 0.250       | 0.617   |
| Girls                                  | 72 (50.0)        | 38 (52.8)        | 34 (47.2)             |             |         |
| Numbers of children in home            |                  |                  |                       |             |         |
| 1                                      | 64 (44.8)        | 30 (41.7)        | 34 (47.2)             | 9.525       | 0.049** |
| 2                                      | 55 (38.2)        | 28 (38.9)        | 27 (38.0)             |             |         |

(Continues)



**TABLE 2** (Continued)

| Variable | Total n (%) | Control   | Intervention | Z/ $\chi^2$ | p-value |
|----------|-------------|-----------|--------------|-------------|---------|
|          |             | n (%)     | n (%)        |             |         |
| 3        | 19 (13.3)   | 14 (19.4) | 5 (7.0)      |             |         |
| 4        | 0           | 4 (5.6)   | 4 (2.8)      |             |         |
| 5        | 0           | 1 (1.4)   | 1 (0.7)      |             |         |

Note: Md ( $P_{25}$ - $P_{75}$ ), median (percentile 25 up to percentile 75); Z, Mann-Whitney U test;  $\chi^2$ , Chi-Square test.

\*Significance determined using Mann-Whitney U test.

\*\*Significance determined using Chi-Square test.

height, weight, and development were measured as preintervention data. Then, in the third months, the caregivers and their children attended the Posyandu program for measuring post program. The program of Posyandu has been implemented across Indonesia by the Government to overcome nutrition problems among young children. The tradition Posyandu provides anthropometrical observations, basic medical treatments, and, sometimes, additional complementary feeding and health education. In the 14 weeks, the height, weight, and development of participants in the control group were measured as postintervention data.

## 2.6 | Statistical analyses

This study employed descriptive and comparative data analyses. Descriptive statistics, including frequencies and percentages, were used to summarize categorical measures; median and percentile-25 and -75 were used to summarize continuous measures. Mann-Whitney U test was used to analyze the correlation between differences in characteristic of participants in the control and intervention groups and numeric data. We used regression analysis to evaluate the association between child age and number of children in the home and the outcomes of study underweight (WAZ), stunting (HAZ), nutritional status (WHZ), and development test.

Then, Chi-square test was used to analyze the differences in the level of weight per age, height per age, weight per height, and development test measurement control and intervention group by the PCGD intervention over 12 weeks. *SPSS* version 22 was used for the analyses. To determine the statistical significance based on the assumption that the appropriate test was performed using a two-tailed significance level of 0.05.

## 3 | RESULTS

Table 2 shows that there were no statistically significant differences in the characteristics of the caregivers in the intervention and control groups ( $p$ -value > 0.05). There were significant age differences between the intervention and control groups children with a median of 21.5 months (10.2-33.7) and 31.5 months (17.2-46.0), respectively ( $p$  = 0.004). There also were significant differences in the number of children in the home between the intervention and

control groups, although the majority of families in both groups had one child in home (47.2% vs. 41.7%;  $p$  = 0.049).

Table 3 shows that there were significant differences in children's nutritional status in the intervention and control groups after the PCGD during 12 weeks of intervention. After the intervention, based on HAZ measurement, the percentage of children who had stunting in the intervention group was higher than that in the control group, while the percentage of normal children in the intervention group was lower than that in the control group (37.5% vs. 22.2% and 62.5% vs. 77.8%;  $p$  = 0.045, respectively OR = 0.47; 95% CI = 0.23-0.99). The prevalence of severe wasting, wasting, and overweight in intervention group was lower than those in the control group. On the other hand, the percentage of normal children in the intervention group was higher than that in the control group (2.8% vs. 12.5%, 4.2% vs. 9.7%, and 13.9% vs. 16.7%; 79.2% vs. 61.1%;  $p$  = 0.048), respectively. In terms of WAZ measurement, there were no significant differences in the prevalence of underweight and normal weight between the control and intervention groups ( $p$  > 0.05). In terms of development test measurement, the prevalence of deviation and false development in the intervention group was lower than those in the control group. Meanwhile, the prevalence of normal development in the intervention group was higher than that in the control group (2.8% vs. 12.5%, 12.5% vs. 16.7%, and 84.7% vs. 70.8%;  $p$  = 0.046, respectively).

Significant differences in baseline data between the intervention and control groups for children's age and number of children in the home may have associated the outcomes of the PCGD intervention. Therefore, we used regression analysis to evaluate both of these factors on study outcomes (Table 4). Children's age was associated with stunting (OR = 1.02; 95% CI = 1.00-1.05;  $p$  < 0.05) and severity wasting (OR = 1.07; 95% CI = 1.03-1.12;  $p$  < 0.01) after PCGD intervention, respectively. Also, the number of children in the home (two or three children) associated with severity wasting and deviation of development test after PCGD intervention ( $p$  < 0.001).

## 4 | DISCUSSION

This study reveals that there were improved child growth and development during the study period. We found that normal weight (WHZ) occurred following the PCGD intervention in the intervention group, while stunting (HAZ) in intervention group is higher

**TABLE 3** Nutritional status and development test ( $n = 144$ )

| Variable             | Preintervention |           |              |               |                  | Postintervention |           |              |               |                  |
|----------------------|-----------------|-----------|--------------|---------------|------------------|------------------|-----------|--------------|---------------|------------------|
|                      | Total           | Control   | Intervention | $\chi^2$      | OR 95% CI        | Total            | Control   | Intervention | $\chi^2$      | OR 95% CI        |
|                      | n (%)           | n (%)     | n (%)        | (p-value)     | (low-upper)      | n (%)            | n (%)     | n (%)        | (p-value)     | (low-upper)      |
| WAZ                  |                 |           |              |               |                  |                  |           |              |               |                  |
| Severely underweight | 13 (9.0)        | 6 (8.3)   | 7 (9.7)      | 0.000 (1.000) | 0.84 (0.27-2.65) | —                | —         | —            | 0.000 (1.000) | 1.00 (0.31-3.26) |
| Underweight          | —               | —         | —            | —             | —                | 12 (8.3)         | 6 (8.3)   | 6 (8.3)      | —             | —                |
| Normal               | 131 (91.0)      | 66 (91.7) | 65 (90.3)    | —             | —                | 132 (91.7)       | 66 (91.7) | 66 (91.7)    | —             | —                |
| HAZ                  |                 |           |              |               |                  |                  |           |              |               |                  |
| Severely stunting    | 39 (27.1)       | 14 (19.4) | 25 (34.7)    | 3.516 (0.039) | 0.45 (0.21-0.97) | —                | —         | —            | 4.012 (0.045) | 0.47 (0.23-0.99) |
| Stunting             | 0               | 0         | 0            | —             | —                | 43 (29.9)        | 16 (22.2) | 27 (37.5)    | —             | —                |
| Normal               | 105 (72.9)      | 58 (80.6) | 47 (65.3)    | —             | —                | 101 (70.1)       | 56 (77.8) | 45 (62.5)    | —             | —                |
| WHZ                  |                 |           |              |               |                  |                  |           |              |               |                  |
| Severely wasting     | 12 (8.3)        | 8 (11.1)  | 4 (5.6)      | 3.434 (0.329) | N/A              | 11 (7.6)         | 9 (12.5)  | 2 (2.8)      | 7.910 (0.048) | N/A              |
| Wasting              | 11 (7.6)        | 6 (8.3)   | 5 (6.9)      | —             | —                | 10 (6.9)         | 7 (9.7)   | 3 (4.2)      | —             | —                |
| Normal               | 103 (71.5)      | 52 (72.2) | 51 (70.8)    | —             | —                | 101 (70.1)       | 44 (61.1) | 57 (79.2)    | —             | —                |
| Overweight           | 18 (12.5)       | 6 (8.3)   | 12 (16.7)    | —             | —                | 22 (15.3)        | 12 (16.7) | 10 (13.9)    | —             | —                |
| Development test     |                 |           |              |               |                  |                  |           |              |               |                  |
| Deviation            | 13 (9.0)        | 10 (13.9) | 3 (4.2)      | 4.161 (0.125) | N/A              | 11 (7.6)         | 9 (12.5)  | 2 (2.8)      | 6.142 (0.046) | N/A              |
| False                | 31 (21.5)       | 15 (20.8) | 16 (22.2)    | —             | —                | 21 (14.6)        | 12 (16.7) | 9 (12.5)     | —             | —                |
| Normal               | 100 (69.4)      | 47 (65.3) | 53 (73.6)    | —             | —                | 112 (77.8)       | 51 (70.8) | 61 (84.7)    | —             | —                |

Note:  $\chi^2$ , Chi-Square test. Significance writing in bold.

Nutritional parameter using growth standard (Z-score) for under five children from WHO (2006). WAZ (Severely underweight: Z-score < -3.0; Underweight: Z-score  $\geq$  -3.0 to < -2.0; Normal:  $\geq$  -2.0). HAZ (Severely stunting: Z-score < -3.0; Stunting:  $\geq$  -3.0 to < -2.0; Normal:  $\geq$  -2.0). WHZ (severely wasting: Z-score < -3.0; Wasting:  $\geq$  -3.0 to < -2.0; Normal:  $\geq$  -2.0 to  $\leq$  2.0; Overweight: > 2.0). BAZ, BMI (body mass index) per age; HAZ, Height-for-age Z-score; WAZ, Weight-for-age Z-score; WHZ, Weight-for-height Z-score.

compared the control group. These results may have reflected differences in baseline children in the intervention and control groups (children's age and number of children in home) from the baseline data. However, the prevalence of nutritional status (WAZ) of the two groups remained similar. The prevalence of normal development among children was higher in the intervention group compared to that of the control group after the intervention of PCGD. Overall, a community-based intervention program for PCGD was partially effective for stimulating the growth and development of 0–72 months old children in rural areas.

The community-based PCGD program was designed to provide parenting classes for mothers with children aged 0–6 years in accordance with the local sociocultural conditions in rural areas. So far, for maternal and child care services in Indonesia, the approach

used is health education through tradition Posyandu conducted every month. In this study, we improved the tradition Posyandu to become Posyandu Plus. Mothers as caregivers attended parenting class meeting. In the Posyandu Plus, we intensified the meetings with mothers through the transfer of knowledge, skills, and nursing technology in maternal and child health care by referring to maternal and child handbook (Table 1). The innovation of parenting class in the Posyandu Plus, we called PCGD. The PCGD was facilitated for mothers to be more holistic in fulfilling their children's growth in terms of nutritional needs, immunization, exclusive breastfeeding, and supplementary feeding for the children. Besides PCGD allows mothers to be able to learn fulfilling the children's needs comprehensively, including children's needs for playing, learning, ways of communication, ways of stimulating development, and stimulating children's creativity.

**TABLE 4** Regression influences of children age and number children in home with WAZ, HAZ, WHZ, and development test after intervention program

| Variable           | Underweight (WAZ)        |                                     | Stunting (HAZ)        |                                     |                  |                    |
|--------------------|--------------------------|-------------------------------------|-----------------------|-------------------------------------|------------------|--------------------|
|                    | OR                       | 95% CI (low–upper)                  | OR                    | 95% CI (low–upper)                  |                  |                    |
| Children's age     | 1.02                     | (0.98–1.06)                         | 1.02*                 | 1.00–1.05                           |                  |                    |
| Number of children |                          |                                     |                       |                                     |                  |                    |
| 2                  | <0.0001                  | <0.0001–.                           | <0.0002               | <0.0001–.                           |                  |                    |
| 3                  | <0.0001                  | <0.0001–.                           | <0.0004               | <0.0001–.                           |                  |                    |
| 4                  | 0.86                     | <0.0001–.                           | <0.0005               | <0.0001–.                           |                  |                    |
| 5                  | 0.94                     | <0.0001–.                           | <0.0004               | <0.0001–.                           |                  |                    |
| Variable           | Nutritional status (WHZ) |                                     | Wasting               |                                     | Overweight       |                    |
|                    | Severity wasting         |                                     | Wasting               |                                     | Overweight       |                    |
| Variable           | OR                       | 95% CI (low–upper)                  | OR                    | 95% CI (low–upper)                  | OR               | 95% CI (low–upper) |
| Children's age     | 1.07**                   | 1.03–1.12                           | 1.02                  | 0.99–1.06                           | 1.00             | 0.98–1.04          |
| Number of children |                          |                                     |                       |                                     |                  |                    |
| 2                  | $20 \times 10^{6***}$    | $38 \times 10^6$ – $11 \times 10^7$ | $42 \times 10^6$      | <0.0001                             | $43 \times 10^6$ | <0.0001–.          |
| 3                  | $96 \times 10^{6***}$    | $15 \times 10^6$ – $61 \times 10^6$ | $36 \times 10^6$      | <0.0001                             | $49 \times 10^6$ | <0.0001–.          |
| 4                  | $30 \times 10^6$         | $30 \times 10^6$ –.                 | $26 \times 10^6$      | <0.0001                             | $28 \times 10^6$ | <0.0001–.          |
| 5                  | 0.73                     | <0.0001–.                           | 0.89                  | 0.89–0.89                           | 0.96             | <0.0001–.          |
| Variable           | Development test         |                                     | False                 |                                     |                  |                    |
|                    | Deviation                |                                     | False                 |                                     |                  |                    |
| Variable           | OR                       | 95% CI (low–upper)                  | OR                    | 95% CI (low–upper)                  |                  |                    |
| Children's age     | 1.00                     | 0.98–1.04                           | 0.99                  | 0.97–1.02                           |                  |                    |
| Number of children |                          |                                     |                       |                                     |                  |                    |
| 2                  | $10 \times 10^{7***}$    | $11 \times 10^6$ – $97 \times 10^7$ | $13 \times 10^{7***}$ | $33 \times 10^6$ – $55 \times 10^6$ |                  |                    |
| 3                  | $11 \times 10^{7***}$    | $11 \times 10^6$ – $1 \times 10^9$  | $74 \times 10^{6***}$ | $16 \times 10^6$ – $33 \times 10^6$ |                  |                    |
| 4                  | $64 \times 10^6$         | $64 \times 10^6$ – $64 \times 10^6$ | $11 \times 10^6$      | $11 \times 10^6$ – $11 \times 10^6$ |                  |                    |
| 5                  | 0.99                     | 0.99–0.99                           | 1.02                  | 1.02–1.02                           |                  |                    |

Note: HAZ, Height-for-age Z-score; WAZ, Weight-for-age Z-score; WHZ, Weight-for-height Z-score.

\* $p < 0.005$ .

\*\* $p < 0.01$ .

\*\*\* $p < 0.001$ .

After the implementation of the PCGD program, the prevalence of normal nutritional status (WHZ) in the intervention group was higher than that in the control group. This indicates that the 12-session parenting class program was able to provide knowledge and skills for mothers with children aged 0–6 years old to be able to provide good nutrition according to their children's age. By providing education through group discussions, mothers know and able to practice exclusive ways to breastfeed babies and how to make complementary foods. The mothers were taught how to monitor their child's growth through monitoring the charts in the maternal and child care handbook (Fink, Levenson, Tembo, & Rockers, 2017; Rockers et al., 2018). Complementary food made by mothers from local food can improve weight gain, because the mothers are able to find food sources based local areas. Then, children prefer food from their living environment with mother's home made (local food) (Susanto et al., 2017). The implementation of PCGD provided a simple education for mothers to improve feeding of children by their caregivers. Therefore, during the implementation of PCGD in Posyandu, it is necessary to provide additional food from local food sources in the future study that are socially known by the family and economically can fulfill family needs.

After the 12 PCGD program sessions, the proportion of stunting (HAZ) in the intervention group was higher, although the results of nutritional status (WAZ) in the two groups were not significantly different. These results may be influenced from the baseline data of age child and number of children in home. This result is different from previous studies (Susanto et al., 2017) that complementary local feeding improved nutritional status for children 6–36 months during one and half month intervention. The differences may be regarding the duration of time and frequencies of meeting, because the PCGD program is more comprehensive and holistic in meeting the needs of growth and development of children, while the previous program only focused on providing complementary feeding. Weight per age does not indicate a chronic or acute of nutritional problem, because weight correlated with age and height (Badan Penelitian dan Pengembangan Kesehatan, 2013). This is supported by the session providing materials on the importance of immunization programs for children to increase immunity to diseases (Susanto, 2018). Mothers are able to stimulate the children's height growth in accordance with the program instructions through the detection and early stimulation of children growth. Therefore, the empowerment of mothers and toddlers needs to be optimized in supporting the reception of basic immunization programs for preventing diseases so that the growth of children becomes optimal.

In terms of development aspect based on KPSP measurement, there was a significant increase of the normal development proportion in the intervention group after the intervention of the PCGD program for 12 sessions. This indicates that children are able to carry out their development tasks according to their age (Billah et al., 2017; Fink et al., 2017; Gelli et al., 2017; Rockers et al., 2016; Rosenblum et al., 2017). This results may be reflected that parenting class meeting in Posyandu plus stimulated mothers to try new innovations by sharing experience for stimulating children's development at home.

This indicates the mothers' self-efficacy in carrying out their role as primary caregivers in very constructive children. Therefore, it is necessary to optimize the availability of toys or toy stages at the local Posyandu center for meeting children's play needs and increasing children's creativity in achieving developmental tasks according to their age.

#### 4.1 | Implication for nursing

The PCGD intervention has the potential to improve the growth and development of children by increasing their nutritional status and stimulating development. Empowering mothers who have children under five in the community can also improve the role of mothers in child care, especially through parenting classes in the community. This program can be developed within the framework of developing maternal and child health services in rural areas by taking into account the situations and conditions based on the sociocultural context of the community. The PCGD activities require active roles of families and local communities in mobilizing and organizing mothers to be actively involved in comprehensive and holistic PCGD services. Monitoring and gradual evaluation of community health nurses can facilitate the running of PCGD activities in local public health centers in rural areas.

#### 4.2 | Limitations

During the implementation of the 12 sessions of the PCGD, there were some limitations. First, the time for collecting data was too short for measuring of weight and height of children. During the intervention of PCGD, the availability of time and energy for identifying local food sources that are used in making complementary foods or supplementary feeding activities was limited. Adjusting the schedule of usual Posyandu activities to Posyandu Plus. Intervention requires active collaboration between the local community and the local public health centers. Second, this research was conducted in only two public health centers with limited samples. Third, differences in baseline data of characteristics of participants (children age and number of children in home) between the intervention and control groups influenced the results. Therefore, future research on the effectiveness of the PCGD intervention using larger sample sizes and greater homogeneity of participants is warranted.

### 5 | CONCLUSION

The PCGD was partially effective for promoting the growth and development of children aged 0–72 months. There were reduced wasting (WAZ) and increased development among children in the intervention group. Contrary to expectation that increased stunting in the intervention group, which may reflect differences in baseline characteristic of participants in the two study groups. Therefore, attention to greater homogeneity of participants in study groups and

larger sample sizes should be used in the future research on the 12 session PCGD intervention. The active involvement of local public health nurses in monitoring and supervising PCGD activities would be indispensable, particularly in mobilizing, organizing, and empowering people to be actively involved in maternal and child health services.

## ACKNOWLEDGMENTS

The author would like to thank Faculty of Nursing and Department of Research and Community Engagement of University of Jember for funding of Research Group (Kelompok Riset/KeRis) Family Health Care Studies and Internship students of Community and Family Health Nursing for collecting data in Public Health Centers (Puskesmas) Panti of District of Jember.

## CONFLICT OF INTEREST

None declared.

## AUTHORS CONTRIBUTION

T. Susanto, conceptualized research design, analyzed data, and writing and final proof of manuscript; L.A. Susumaningrum, team leader of research, designed of measurement, and collecting data; H. Rasny, collecting data; R.A. Yunanto, literature review and collecting data; K.R.M. Nur, collecting data. All authors approved for final manuscript for submission.

## ORCID

Tantut Susanto  <https://orcid.org/0000-0002-9685-9869>

## REFERENCES

- Adhikari, D., Khatri, R. B., Paudel, Y. R., & Poudyal, A. K. (2017). Factors associated with underweight among under-five children in eastern Nepal: Community-based cross-sectional study. *Frontiers in Public Health*, 5(December), 1–9. <https://doi.org/10.3389/fpubh.2017.00350>
- Badan Penelitian dan Pengembangan Kesehatan. (2013). Riset Kesehatan Dasar (RISKESDAS) 2013. National basic health research 2013. Retrieved from <http://www.depkes.go.id/resources/download/general/Hasil%20Riskasdas%202013.pdf>. Accessed 13 March 2018.
- Batiro, B., Demissie, T., Halala, Y., & Anjulo, A. A. (2017). Determinants of stunting among children aged 6–59 months at Kindo Didaye woreda, Wolaita Zone, Southern Ethiopia: Unmatched case control study. *PLoS ONE*, 12(12), 1–15. <https://doi.org/10.1371/journal.pone.0189106>
- Billah, S. M., Ferdous, T. E., Karim, M. A., Dibley, M. J., Raihana, S., Moinuddin, M., ... Arifeen, S. E. (2017). A community-based cluster randomised controlled trial to evaluate the effectiveness of different bundles of nutrition-specific interventions in improving mean length-for-age z score among children at 24 months of age in rural Bangladesh: Study protocol. *BMC Public Health*, 17(1), 1–12. <https://doi.org/10.1186/s12889-017-4281-0>
- Dhamayanti, M. (2006). Kuesioner Praskrining Perkembangan (KPSP) Anak. Prascreeing development questionnaire for children. *Sari Pediatri*, 8(1), 9–15.
- Fink, G., Levenson, R., Tembo, S., & Rockers, P. C. (2017). Home- and community-based growth monitoring to reduce early life growth faltering: An open-label, cluster-randomized controlled trial. *American Journal of Clinical Nutrition*, 106(4), 1070–1077. <https://doi.org/10.3945/ajcn.117.157545>
- Frankenburg, W. K., van Doorninck, W. J., Liddell, T. N., & Dick, N. P. (1976). Revised Denver Pre-Screening Developmental Questionnaire (R-PDQ). *Pediatrics*, 57(5), 744–753.
- Geberesllassie, S. B., Abebe, S. M., Melsew, Y. A., Mutuku, S. M., & Wassie, M. M. (2018). Prevalence of stunting and its associated factors among children 6–59 months of age in Libo-Kemekem district, Northwest Ethiopia; A community based cross sectional study. *PLoS ONE*, 13(5), 1–11. <https://doi.org/10.1371/journal.pone.0195361>
- Gelli, A., Margolies, A., Santacroce, M., Sproule, K., Theis, S., Roschnik, N., ... Kutundu, M. (2017). Improving child nutrition and development through community-based childcare centres in Malawi - The NEEP-IE study: Study protocol for a randomised controlled trial. *Trials*, 18(1), 1–12. <https://doi.org/10.1186/s13063-017-2003-7>
- Kadi, F. A., Garna, H., & Fadlyana, E. (2008). Kesetaraan Hasil Skrining Risiko Penyimpangan Perkembangan Menurut Cara Kuesioner Praskrining Perkembangan (KPSP) dan Denver II pada Anak Usia 12–14 Bulan dengan Berat Lahir Rendah. Equivalency of screening results for risk delayed development based on questionnaire of screening development (KPSP) and denver II in children aged 12–14 months with low birth weight. *Sari Pediatri*, 10(38), 29–33.
- Kemendes, R. I. (2016). *Buku Kesehatan Ibu Dan Anak. Handbook of Maternal and Child Health Care*. Jakarta, Indonesia: Kementerian Kesehatan RI.
- Kiefner-Burmeister, A., Hoffmann, D., Zbur, S., & Musher-Eizenman, D. (2016). Implementation of parental feeding practices: Does parenting style matter? *Public Health Nutrition*, 19(13), 2410–2414. <https://doi.org/10.1017/S1368980016000446>
- Laurus, G., Fatimah, S. N., & Gurnida, D. A. (2016). Pattern of Energy and Protein Intake among Stunted Children Aged 3–5 Years in Jatinangor. *Althea Medical Journal*, 3(3), 364–370.
- Ministry of Health Indonesia. (2013). *Riset kesehatan dasar. Riset Kesehatan Dasar 2013 (Basic Health research 2013)*. Jakarta, Indonesia: National Health Department.
- Mozaffari-Khosravi, H., Morowatisharifabad, M. A., Fallahzade, H., Gerami, M. H., Salehi-Abargouei, A., & Khankolabi, M. (2016). Parenting style, parental feeding practices and children's nutritional status in authoritative parenting style model: A structural equation modeling. *Iranian Red Crescent Medical Journal*, 19(3), 1–7. <https://doi.org/10.5812/ircmj.41401>
- Rockers, P. C., Fink, G., Zanolini, A., Banda, B., Biemba, G., Sullivan, C., ... Hamer, D. H. (2016). Impact of a community-based package of interventions on child development in Zambia: A cluster-randomised controlled trial. *BMJ Global Health*, 1(3), e000104. <https://doi.org/10.1136/bmjgh-2016-000104>
- Rockers, P. C., Zanolini, A., Banda, B., Chipili, M. M., Hughes, R. C., Hamer, D. H., & Fink, G. (2018). Two-year impact of community-based health screening and parenting groups on child development in Zambia: Follow-up to a cluster-randomized controlled trial. *PLoS Medicine*, 15(4), 1–15. <https://doi.org/10.1371/journal.pmed.1002555>
- Rosenblum, K. L., Muzik, M., Morelen, D. M., Alfafara, E. A., Miller, N. M., Waddell, R. M., ... Ribaud, J. (2017). A community-based randomized controlled trial of Mom Power parenting intervention for mothers with interpersonal trauma histories and their young children. *Archives Womens Mental Health*, <https://doi.org/10.1007/s00737-017-0734-9>
- Sandjaja, S., Budiman, B., Harahap, H., Ernawati, F., Soekatri, M., Widodo, Y., ... Khouw, I. (2013). Food consumption and nutritional

- and biochemical status of 0-5-12-year-old Indonesian children: The SEANUTS study. *The British Journal of Nutrition*, 110(Suppl\_S3), S11-S20. <https://doi.org/10.1017/S0007114513002109>
- Susanto, T. (2018). Public health nurse services for maternal-child immigrant healthcare: A literature review. *Central European Journal of Nursing and Midwifery*, 9(2), 848-854. <https://doi.org/10.15452/CEJNM.2018.09.0014>
- Susanto, T., Syahrul, S., Sulistyorini, L., Rondhianto, R., & Yudisianto, A. (2017). Local-food-based complementary feeding for the nutritional status of children ages 6-36 months in rural areas of Indonesia. *Korean Journal of Pediatrics*, 60(10), 320-326. <https://doi.org/10.3345/kjp.2017.60.10.320>
- UNICEF. (2015). *Underweight*. Geneva: UNICEF. Retrieved from [https://www.unicef.org/publications/files/UNICEF\\_English\\_NutritionReport\\_pg12\\_correction\\_14Nov2013.pdf](https://www.unicef.org/publications/files/UNICEF_English_NutritionReport_pg12_correction_14Nov2013.pdf) [last access on 19 September 2018].
- WHO. (2006). WHO Child Growth Standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age. Methods and development. Retrieved from [https://www.who.int/childgrowth/standards/Technical\\_report.pdf](https://www.who.int/childgrowth/standards/Technical_report.pdf) [last accessed 06 June 2016].
- WHO. (2013). Training course and other tools. Retrieved August 6, 2016, from <http://www.who.int/childgrowth/training/en/> [last accessed 06 August 2016].
- WHO. (2014). WHO child growth standards: Methods and development. Retrieved from [http://www.who.int/childgrowth/standards/technical\\_report/en/](http://www.who.int/childgrowth/standards/technical_report/en/) [last accessed 06 June 2016].
- WHO. (2015). Water, sanitation and hygiene in health care facilities: Status in low- and middle-income countries and way forward. Retrieved from [https://apps.who.int/iris/bitstream/handle/10665/154588/9789241508476\\_eng.pdf;jsessionid=C3AF2817A4FD8D1FC62845FEFFDA4F1D?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/154588/9789241508476_eng.pdf;jsessionid=C3AF2817A4FD8D1FC62845FEFFDA4F1D?sequence=1) [last accessed 02 June 2018].
- WHO. (2018). *Progress towards the SDGs: A selection of data from World Health Statistics 2018*. Geneva: WHO. Retrieved from [http://www.who.int/gho/publications/world\\_health\\_statistics/2018/EN\\_WHS2018\\_SDGhighlights.pdf?ua=1](http://www.who.int/gho/publications/world_health_statistics/2018/EN_WHS2018_SDGhighlights.pdf?ua=1) [last accessed 02 June 2018].

**How to cite this article:** Susanto T, Yunanto RA, Rasny H, Susumaningrum LA, Nur KRM. Promoting Children Growth and Development: A community-based cluster randomized controlled trial in rural areas of Indonesia. *Public Health Nurs.* 2019;36:514-524. <https://doi.org/10.1111/phn.12620>

