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## Photovoice and Youth on Violence and Related Topics: A Systematic Review

Yingwei Yang

*University of South Florida College of Public Health, yingweiyang@usf.edu*

Andrew C. Lim

*University of South Florida College of Public Health*

Renée E. Wallace

*University of South Florida College of Public Health*

Stephanie Marhefka-Day

*University of South Florida College of Public Health*

Karen D. Liller

*University of South Florida College of Public Health*

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# PHOTOVOICE AND YOUTH ON VIOLENCE AND RELATED TOPICS: A SYSTEMATIC REVIEW

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**Yingwei Yang, PhD, MSc, BMSc**  
**Andrew C Lim**  
**Renée E Wallace, MPH**  
**Stephanie Marhefka-Day, PhD**  
**Karen D Liller, PhD**

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**Background** | Photovoice is a qualitative method that enables individuals, including youth, to identify health issues and enhance their community through photo-taking and photo discussions.<sup>1</sup> Photovoice was conceptualized based on documentary photography, feminist theory, critical consciousness, and health education.<sup>1-3</sup> The main steps and goals of photovoice are to explore community assets and issues through multiple sessions of photo-taking, to inspire critical thinking of community issues via follow-up photo discussions, and to take actions and reach policy makers through photo exhibitions and other advocacy activities.<sup>1,4</sup> Typically, a series of trainings and workshops should be conducted before the implementation of the initial round of photo-taking, in order to provide participants with sufficient information on photovoice concepts, ethical and technical use of cameras, and research topics or themes.<sup>1,4</sup>

Noted as both a participatory action research (PAR) and community-based participatory research (CBPR) strategy, photovoice lends itself to community capacity-building and self-advocacy for public health issues.<sup>1-6</sup> Since the early 2000s, it has been widely applied to studies and intervention programs aiming to explore and improve the neighborhood environment and to address community issues related to violence, community safety, risk behaviors (e.g. tobacco use, drug use), physical activity, and health disparities.<sup>7-11</sup> With its flexible methodology, photovoice purports to

be easily adaptable to the needs of diverse groups of people and communities.<sup>1,6</sup>

Considering adolescents' literacy level and the visual nature of this method, photovoice provides a more appealing and interactive way for youth to be involved in social actions and community enhancements compared with other commonly used qualitative methods (e.g. in-depth interviews, focus groups). It empowers youth to improve community environments to which they are exposed.<sup>4</sup> In 2006, Wang summarized 10 photovoice projects that were focused on the involvement of youth to address community issues and make community change.<sup>4</sup> Among those community issues that affected youth's well-being, violence and risk behaviors were highlighted.<sup>4</sup>

Violence is an urgent public health issue that harms youth's physical and mental health, has far-reaching influence on their family, and causes economic burdens to society.<sup>12,13</sup> Rather than being an isolated behavior, violence is highly associated with other risk behaviors (e.g. substance use), mental health issues (e.g. depression), and community characteristics (e.g. safe/unsafe environment, active gang activities).<sup>14</sup> Youth exposed to violence in their environment, particularly places with high crime, tend to demonstrate multiple risk behaviors, suffer from mental health issues, participate in gang activities, and have low perceptions of safety in the community.<sup>15,16</sup> Therefore, violence studies and prevention programs

should not be separated from these related topics mentioned above, especially in the utilization of photovoice, a very exploratory method that usually identifies a series of related themes.

Although photovoice is a commonly used qualitative method for youth participatory research on violence, risk behaviors, and disadvantaged communities, to the best of our knowledge, no systematic review has been published on its application to violence-related topics. To bridge this gap and provide implications for future research and programs, a systematic review was conducted with the aim to explore how photovoice has been applied to violence and related studies among youth. Specifically, this review addressed:

- 1) The characteristics of included studies using photovoice;
- 2) The rationale of using photovoice with youth participants;
- 3) Strengths and limitations of the photovoice methodology when applied to youth.

**Methods | Protocol and registration.** The inclusion criteria, search strategy, and data extraction and analysis plan were specified in advance and documented in a protocol, which has been registered in PROSPERO, an international database of prospectively registered systematic reviews in health and related disciplines.<sup>17</sup> Due to an updated literature search in 2019, more details and searching results were added to the registered protocol.<sup>17</sup>

**Information source and search strategy.** A search strategy was finalized and documented in the protocol after a pilot search was conducted with a librarian and two adjustments were made within the review team.<sup>17</sup> The search strategy included three concepts: photovoice, youth and violence-related topics. Two rounds of formal searches were executed across the following electronic databases: PubMed, CINAHL, PsycINFO, Embase, and Web of Science, using the predefined search terms and strings in the protocol.<sup>17</sup> The first search was conducted between September 19<sup>th</sup> and October 4<sup>th</sup>, 2017 to cover sources published from inception to the most current record (1997-2017), without using date or language restrictions to gain the maximum number of records. An updated search (2<sup>nd</sup> round) was performed from April 9<sup>th</sup> to 14<sup>th</sup>, 2019, to identify new publications between the first search and the second search (2017-2019), using date filters to minimize records of duplicates. The duplicates between the two searches were checked and removed

manually. Only new records were imported into EndNote for screening (Table 1).

**Eligibility criteria.** Inclusion criteria were predefined in the protocol as follows: 1) research method: photovoice; 2) types of participants: adolescents, youth, middle/high school students, or the median age of participants between 12-18 years old; 3) types of topics: violence, community safety, risk behaviors, substance use, mental health (e.g. depression), gang activities; 4) types of studies: qualitative study using the technique of photovoice, mixed methods study including photovoice; 5) language: English; and 6) published after January 1997, when the term “photovoice” was first mentioned and the photovoice methodology was formally developed.

**Study selection.** All titles and abstracts were screened by the review team. Specifically, the primary reviewer screened the identified records and another reviewer double checked the process, under the supervision of two senior reviewers. Records that potentially met the inclusion criteria were used for full-text screenings. Abstracts that failed to meet the inclusion criteria were excluded. Once a record was moved to a full-text screen, a further assessment for eligibility was conducted independently by two reviewers, resulting in a final sample of studies for this systematic review. Steps and screenings in the study selection process were documented in Endnote groups. While record numbers in each step were tracked in a PRISMA flow chart, detailed information was kept in computer folders.

**Data extraction and analysis.** Included studies were extracted to a predefined spreadsheet with planned headings. The initial headings were developed based on the primary reviewer’s photovoice knowledge and experience, which were then revised through discussions with two senior reviewers and finalized by piloting data extraction of the first five included articles. Categories and headings of the spreadsheet used for formal data extraction was documented in the registered protocol.<sup>17</sup> Data were extracted by the primary reviewer and checked by another two reviewers for accuracy. The review team discussed the data extraction process upon the completion of every four to five studies.

**Synthesis and report writing.** Since there is no absolute framework for the synthesis of qualitative studies, and especially a lack of method-specific guidelines,<sup>18</sup> extracted data were synthesized narratively based on the well-established photovoice

process and the need to address the research questions of this systematic review. This was done to provide more detailed photovoice information for further studies. Specifically, a descriptive synthesis was conducted to summarize the characteristics of included studies, the rationale of using photovoice with youth, and the strengths and limitations of the photovoice methodology. No meta-analyses were conducted as substantive heterogeneity exists among the included exploratory qualitative studies. The report of this systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.<sup>19,20</sup>

**Risk of bias (quality) assessment.** Given the diversity of qualitative methods, there is no consensus on how to appraise the quality.<sup>18,21</sup> However, the McMaster

Critical Review Form was selected in this review as it not only covers the commonly used checklist questions for critical appraisal of qualitative research, accompanied by columns for further comments, but also specifies the methodological quality and study process, correspondent with the review purpose and research questions.<sup>22</sup> Two reviewers answered the questions and filled out the columns of the review form independently to assess the quality of each included study, and then met weekly or biweekly to compare the completed forms. For mixed-methods studies, only the photovoice part was assessed. Discrepancies between the two reviewers were documented in an excel sheet, discussed in group meetings, and solved with the involvement of a third reviewer if necessary.

**Table 1.** Search Strings and Results

Databases	Search Strings	First Search Results*	Second Search Results**	Total
PubMed	((Photovoice OR Photo novella) AND (Adolescent OR “middle school” OR “high school” OR Child)) AND (Violence OR Crime OR Firearms OR Perceived safety OR Substance use OR Tobacco Use OR Drug use OR Alcohol Drinking OR Mental Health OR Depression OR Risk-Taking OR Gang activities)	47	15	62
CINAHL	((Photovoice OR Photo novella) AND (Adolescent OR “middle school” OR “high school” OR Child)) AND (Violence OR Crime OR Firearms OR Perceived safety OR Substance use OR Tobacco Use OR Drug use OR Alcohol Drinking OR Mental Health OR Depression OR Risk-Taking OR Gang activities)	15	6	21
PsycINFO	((Photovoice OR Photo novella) AND (Adolescent OR “middle school” OR “high school” OR Child)) AND (Violence OR Crime OR Firearms OR Perceived safety OR Substance use OR Tobacco Use OR Drug use OR Alcohol Drinking OR Mental Health OR Depression OR Risk-Taking OR Gang activities)	55	15	70
Embase	('photovoice'/exp OR 'photovoice') AND ('juvenile'/exp OR 'juvenile') AND ('violence'/exp OR 'violence' OR 'crime'/exp OR 'crime' OR 'firearm'/exp OR 'firearm' OR 'substance use'/exp OR 'substance use' OR 'tobacco use'/exp OR 'tobacco use' OR 'drug use'/exp OR 'drug use' OR 'drinking behavior'/exp OR 'drinking behavior' OR 'underage drinking'/exp OR 'underage drinking' OR 'mental health'/exp OR 'mental health' OR 'depression'/exp OR 'depression' OR 'risk behavior'/exp OR 'risk behavior')	44	13  (Original 16, 3 duplicates with 1 <sup>st</sup> search removed)	57
Web of Science	((Photovoice OR Photo novella) AND (Adolescent OR “middle school” OR “high school” OR Child)) AND (Violence OR Crime OR Firearms OR Perceived safety OR Substance use OR Tobacco Use OR Drug use OR Alcohol Drinking OR Mental Health OR Depression OR Risk-Taking OR Gang activities))	93	32  (Original 35, 3 duplicates with 1 <sup>st</sup> search removed)	125
<b>Total</b>		<b>254</b>	<b>81</b>	<b>335</b>

\* Literature published between January 1997 and October 2017, in English

\*\* Literature published between October 2017 and April 2019, in English

**Results** | The two rounds of literature search from the five selected databases resulted in a total of 335 records (Table 1). After removing duplicates, there were 197 unique records, with 150 in the first search and 47 in the updated search. The reviewers screened the title and abstract of each record and excluded 128 irrelevant studies, 24 non-peer-reviewed articles, four conference abstracts without the full text available, and one non-English article (Fig 1). Therefore, 40 records were processed for the subsequent full-text screen. After applying inclusion and exclusion criteria to these 40 studies, 17 records were excluded due to their topics, participants' age range, or lack of description on photovoice process (Table 2), leaving 23 eligible studies to be included in the review (Table 3). The screening and review process are shown in Fig 1, the PRISMA flow chart.

**Characteristics of included studies.** As shown in Table 3, a total of 23 articles were identified and included in the narrative synthesis, of which, 18 studies used qualitative design while the other five studies used mixed-methods design. Among the qualitative studies, 14 used photovoice as the only data collection method while four studies incorporated photovoice with other qualitative methods, such as in-depth interviews, focus groups, and an art-based method. Sample size varied, with most studies having 6- 20 participants (n=13).

**Study location and setting.** This review included studies from United States (n=12), China (n=2), Canada (n=2), South Africa (n=1), Middle East (n=1), Scotland (n=1), Rwanda (n=1), Moldova (n=1), and multiple countries (n=2) (Table 3). Despite the global setting, these studies were predominantly implemented in communities and neighborhoods for photo taking (n=21). Among them, eight studies reported the involvement of schools, community-based organizations and service agencies for participant recruitment or the facilitation of photovoice procedures (Table 3). However, there were two studies outside of the community setting, with one being conducted in a school and the other one in a center for street girls (Table 3).

**Material/equipment.** Of the 23 studies, 17 studies provided information on the type/brand of the cameras they chose for photo taking, with six using disposable cameras, six using digital cameras, three using personal equipment (smart phones or cameras), one using non-disposable cameras, and one using Holga cameras (Table 3). Researchers tend to choose digital cameras in recent studies. For photovoice studies with

multiple sessions, participants were typically instructed to take photos in one or two weeks for each session and returned their disposable cameras or turned in their photos at the regular interval.<sup>11,15,23-27</sup>

**Photo discussion framework.** Sixteen out of the 23 studies described the methods or guidelines to facilitate the group discussion and photo explanation (Table 3). Almost all of them (n=15) used the SHOWeD framework, including five exploratory questions: 1) what do you **See** here; 2) what is really **Happening** here; 3) how does this relate to **Our** lives; 4) **Why** does this situation, concern or strength **exist**; and 5) what can we **Do** about it.<sup>5</sup> Besides the SHOWeD framework, one study used a PHOTO guideline to include an additional set of five questions.<sup>11</sup> Unlike the 15 studies that used the SHOWeD framework, one study applied self-developed questions to gain information on where the picture was taken, why it was taken, and what it meant to participants.<sup>23</sup>

**Thematic analysis.** Sixteen of the 23 studies conducted thematic analyses on the data captured using photovoice, with 12 studies providing an in-depth description of the analytical process, including transcription of photo-discussions, translation if applicable, code book development, coding, and theme identification conducted by researchers or study staff.<sup>24,28</sup> Only a few studies (n=3) mentioned the involvement of youth in the thematic analysis after photo discussion sessions,<sup>7,11,24</sup> of which, one study fully involved youth participants in every stage of analysis from photo selection for thematic analysis to theme finalization.<sup>11</sup>

**Common themes.** As shown in Table 3, photovoice findings among the included studies were heterogeneous. Although no common themes were generated across studies, youth participants in multiple studies (n=11) captured violence, alcohol and drug use, smoking, and unsafe places as their top community issues or health concerns.<sup>11,15,25-33</sup> Moreover, seven studies addressed the significant influence of physical and social community environments on youth's violent and risk behaviors.<sup>7,9,10,23,34-36</sup> In addition, two studies identified the association between substance use and violence behaviors.<sup>28,34</sup>

**Dissemination/social action.** Eleven studies addressed the process of dissemination of photos and results, using one or multiple methods as follows: Photo exhibits in the community or City/Town Hall (n=8), videos (n=2), PowerPoint presentations (n=2), colored

newsletters (n=1) and community forums/events (n=2) (Table 3). While the majority of these studies reported hosting only one photo exhibit or community event, two studies stated that multiple photo exhibits were planned in different places for dissemination purpose.<sup>11,25</sup> As for the audience, photo exhibits and presentations were typically targeted on community residents, youth's family, program coordinators and staff, and local organizations, while videos and

newsletters were developed to reach broader audience, including policy makers and the public.

**Rationale of using photovoice with youth.** Of the 23 articles, 18 addressed their rationale of using photovoice with youth, providing one or multiple reasons. Among them, 10 articles addressed that photovoice provided a platform for youth, who usually have little involvement in social action and access to decision makers to express their opinions.

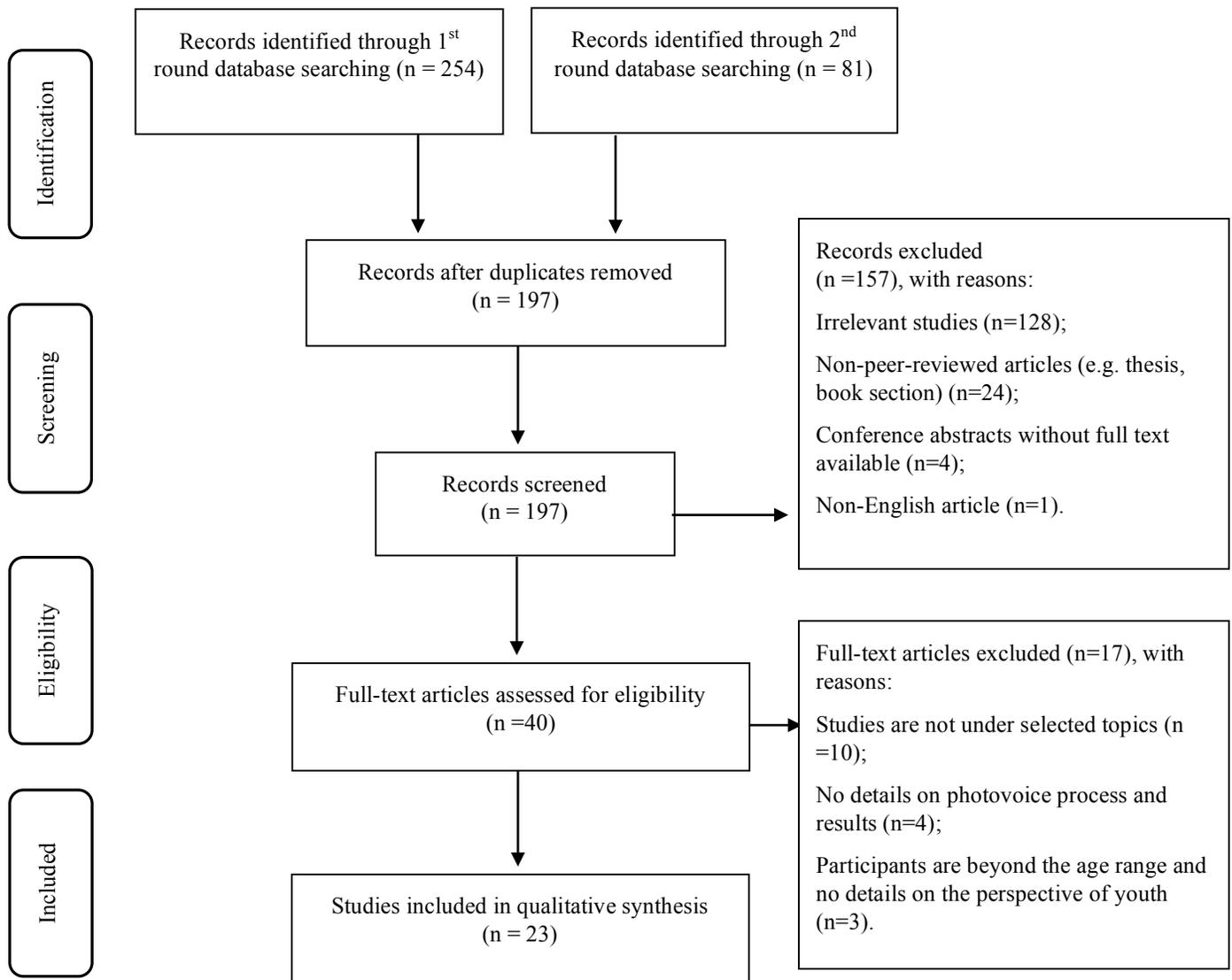


Fig 1. PRISMA Flow Chart

**Table 2.** Reason for Exclusion of Studies After Full-text Review (n=17)

<b>Author(s), Year</b>	<b>Reason for Exclusion</b>
1. Wilson, Minkler, Dasho, Wallerstein, & Martin, 2008 <sup>43</sup>	No details about photovoice process and results
2. Denov, Doucet, & Kamara, 2012 <sup>44</sup>	The study is not under selected topics (war)
3. Jardine & James, 2012 <sup>45</sup>	No details about photovoice process and results
4. Young et al., 2013 <sup>46</sup>	The study is not under selected topics (health)
5. Adekeye, Kimbrough, Obafemi, & Strack, 2014 <sup>47</sup>	Participants beyond the age range (13-18 years old and over 65 years) and no details about the perspective of youth
6. Madrigal et al., 2014 <sup>48</sup>	The study is not under selected topics (health)
7. Brandao Neto, Silva, de Aquino, de Lima, & Monteiro, 2015 <sup>49</sup>	No details about photovoice process and results
8. Saimon et al., 2015 <sup>8</sup>	The study is not under selected topics (physical activity)
9. Woodgate & Busolo, 2015 <sup>50</sup>	The study is not under selected topics (cancer prevention)
10. Rose, Shdaimah, de Tablan, & Sharpe, 2016 <sup>51</sup>	The study is not under selected topics (wellbeing and agency)
11. Tomita, 2016 <sup>52</sup>	The study is not under selected topics (resilience)
12. Winter et al., 2016 <sup>53</sup>	The study is not under selected topics (physical activity)
13. Adams, Savahl, & Fattore, 2017 <sup>54</sup>	The study is not under selected topics (perception of natural spaces)
14. Bashore, Alexander, Jackson, & Mauch, 2017 <sup>55</sup>	The study is not under selected topics (health promotion and stress coping)
15. Holliday, Wynne, Katz, Ford, & Barbosa-Leiker, 2018 <sup>56</sup>	Participants beyond the age range (10-65 years old) and no details about the perspective of youth
16. Letsela, Weiner, Gafos, & Fritz, 2019 <sup>57</sup>	Participants beyond the age range (18-24 years old)
17. Yu et al., 2019 <sup>58</sup>	No details about photovoice process and results

Specifically, photovoice allowed youth to identify community issues important to them through photos, to develop their critical thinking for social action through photo discussions, and more importantly, to advocate for social change and inform policy makers through photo exhibitions and other dissemination

channels.<sup>9,10,23,24,28,31-33,36,39</sup> Also, nine studies highlighted that photovoice is a powerful, unique and effective tool in youth participatory action research (YPAR) and CBPR by capturing community-level information through the eyes of youth and engaging youth in health promotion and community

enhancement.<sup>10,11,25,29,30,34,37,38,40</sup> In addition, two studies mentioned that photovoice was not constrained by languages and therefore more suitable for the youth culture than interviews and focus groups.<sup>37,38</sup>

**Photovoice strengths.** As stated in the included studies, photovoice empowers youth to speak out and take action for community improvement. Moreover, photovoice enables researchers to gain a better and deeper understanding of the impact of violence and related issues on youth's health. Additionally, photovoice offers multiple dissemination options in addition to scientific publications. To specify, the advantages of photovoice are as follows:

*For youth participants.* Photovoice allows youth to express their concerns about violence and community safety, determine and prioritize the issues that affect their lives, and evoke critical thinking for community improvement.<sup>9,10,23,24,29,32,33,36,39</sup> Moreover, photovoice is more attuned to youth culture.<sup>37</sup> Specially, photovoice enables youth with low literacy skills, vulnerability, marginalization or little access to decision makers to have their voice heard by researchers and policy makers through photographs, which is more powerful and appealing than words alone.<sup>25,31,34,37,38</sup> Additionally, photovoice encourages youth to take part in data collection, thematic analysis, and results dissemination, nurturing their interest in scientific research.<sup>25,30</sup>

*For researchers.* Photovoice questions or themes are usually broader and less specific than conversation-based methods, and therefore it can capture more nuanced information and bring a deeper understanding of health problems and community issues that may not be accessed by interviews or focus groups.<sup>9,23,27,30,32,34,37,39</sup> Also, photovoice is a compatible technique for mixed-methods research and can be incorporated into other research methods, such as focus groups, in-depth interviews, surveys, community maps, and GIS, providing researchers with rich data to triangulate findings.<sup>15,26,32,35</sup>

*For community.* Unlike conversation-based data collection methods, photovoice provides a visual and participatory way to explore community environments and issues that affect youth's health.<sup>10,28,32</sup> Compared with words alone, photographs are more appealing when revealing community issues.<sup>38</sup> Furthermore, as a commonly used tool for CBPR and YPAR, photovoice enables a wide range of community involvement.<sup>10,11</sup> Going beyond a mere assessment of community needs, photovoice assists the community and researchers in

building trusting relationships for long-term impact and future prevention programs to improve community health.<sup>24,25</sup>

*For dissemination purposes.* While most qualitative methods rely largely on the researchers' scientific publications for dissemination purposes, photovoice not only offers multiple methods of dissemination (e.g. photo exhibit, videos, and social media), but also enables participants to be actively involved in the dissemination process intending to influence the public, policy makers and community stakeholders.<sup>11,24</sup> This feature of photovoice could significantly improve the efficiency and effectiveness of dissemination activities and therefore facilitate collaborative efforts for policy change and community health promotion.<sup>24</sup>

**Photovoice limitations/challenges.** Although photovoice is a powerful qualitative tool for violence research and related studies, limitations and challenges exist. Based on the included studies, photovoice is time-consuming. While very few photovoice studies only include one session of photo-taking and discussion, most study designs include multiple training and photovoice sessions, which could last for months and even years.<sup>9,11,24,34</sup> Moreover, photovoice could be very resource demanding. Unlike other qualitative methods, a camera is essential. As shown in Table 3, there is a trend for using digital cameras in recent photovoice studies, which would largely increase study budgets. In this situation, researchers may consider allowing participants to use their personal digital cameras.<sup>7,24,27</sup>

Besides the limitations mentioned above, special challenges may exist among youth participants. For example, youth may be unable to follow all the ethical principles when taking pictures or they may fail to capture images that represent community assets or issues.<sup>23,39</sup> To deal with these potential pitfalls, researchers should do multiple training sessions on the ethical use of cameras, create a step-by-step explanation of the photovoice concept, and use various age appropriate strategies to illustrate photovoice questions (e.g. visual examples and practice activities).<sup>9</sup>

While the photovoice method has the potential to provide valuable insights for violence and related studies, the small sample size largely limits the generalizability of research findings.<sup>9,10,24,27,31,34-36,38,39</sup> Moreover, for studies with multiple sessions of photo taking and discussions, youth participants may easily

become disengaged and fail to attend all sessions.<sup>30,32,37</sup> To reduce the likelihood of disengagement, researchers should collect the participants' contact information at the beginning of the study, send out reminders via text to the participants and parents before each session, and mail information packages to the absent participants to make sure that they get the information.<sup>32</sup>

**Discussion** | Photovoice provides an ideal way for youth to explore community issues and to advocate for social change, especially pertaining to violence and other community issues.<sup>4</sup> This systematic review provides evidence for the photovoice methodology by summarizing the characteristics of violence and related studies in terms of photo-taking equipment/cameras, photo discussion framework and photo dissemination methods, by identifying the rationale of using photovoice among youth, and by eliciting the strengths and limitations from included studies regarding the photovoice process and implementation from the perspective of youth participants, researchers, and communities.

As shown in the results, multiple studies mentioned that their photovoice findings were not generalizable due to the small sample size.<sup>10,27,34,38</sup> To offset this limitation, future studies are encouraged to increase the number of participants and collected photos in order to get more representative findings. Moreover, compared with the other qualitative methods (e.g. structured individual interviews or focus groups), research questions used to guide photo taking and discussions tend to be broad and generic. While such exploratory nature of the photovoice method could provide researchers more nuanced information on violence studies, the findings are typically not in-depth in terms of causes, dynamics, and impacts of violent behaviors. Further investigation of photovoice findings by other qualitative and quantitative methods are needed in order to get a more comprehensive understanding of violent behaviors.

Among the included studies, only a few engaged youth participants in the photovoice data analysis. This may be partially due to unique challenges youth are facing that limit their participation, such as competing demands among school attendance, personal health issues, and family responsibilities.<sup>4</sup> In the future, researchers should provide more opportunities for youth to be involved in not only the sessions of photo-taking and discussion, but also the process of thematic analysis and dissemination. This can be done by offering youth a flexible participation schedule,

appropriate incentives, and necessary financial support for dissemination activities. Benefited by the collaborative work between youth participants and researchers, the youth will gain additional opportunities to practice critical thinking and social action skills and the researchers will receive a more in-depth understanding of community issues that will facilitate their plans for prevention strategies.<sup>4,9</sup>

To the best of our knowledge, this is the first systematic review that synthesizes the characteristics of photovoice studies on violence and related topics (e.g. community safety, substance use) among youth. The rationale and strengths of using the photovoice methodology in these studies have been addressed. Specifically, photovoice has the capability for youth to reach policy makers, the potential for researchers to explore violence and other community issues in a visual and nuanced way, and the possibility for communities to take social actions and community enhancement through critical thinking. Future studies are recommended to provide more opportunities for youth to be engaged in photo analysis and dissemination. Photovoice publications and reports should have more detailed descriptions on ethical considerations and issues when involving youth.

While this review provides evidence to guide future violence-related photovoice studies and intervention programs involving youth with detailed descriptions and synthesis of the characteristics of previous studies, it is not free of limitations. This review only includes peer-reviewed journal articles. Some photovoice researchers may choose to do technical reports or other community-based materials (e.g. flyers, posters), instead of publishing formal manuscripts. Exclusion of the "gray" literature may lead to loss of information. But this should not greatly affect our findings, as most "gray" literature will not meet the criteria of quality assessment and eventually be excluded. Also, due to the exploratory nature of photovoice studies that usually use broad themes instead of specific outcomes, the author did not measure risk across studies in terms of selective reporting and publication bias.

**Conclusion** | In order to translate research results into practice and eventually improve youth's well-being, violence research findings should be effectively disseminated. Photovoice has the potential to improve the community by disseminating findings through photo exhibitions. It is highly recommended that future intervention programs utilize photovoice as a tool to prevent violence and improve the environment for children and youth.

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Yingwei Yang, PhD, MSc, BMSc, University of South Florida, College of Public Health. Tampa, FL. Email at: [yingweiyang@usf.edu](mailto:yingweiyang@usf.edu). Andrew C Lim, MPH Student, University of South Florida, College of Public Health. Tampa, FL. Renée E Wallace, MPH, University of South Florida, College of Public Health. Tampa, FL. Stephanie Marhefka-Day, PhD, University of South Florida, College of Public Health. Tampa, FL. Karen D Liller, PhD, University of South Florida, College of Public Health. Tampa, FL.

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**Table 3.** Study Characteristics of Included Articles (n=23)

Author(s), Year	Topic	Location	Study Setting	Participants	Study Design	Equipment	Discussion Guideline	Main Themes	Photo Exhibit
Wang et al., 2004 <sup>40</sup>	Violence prevention	Flint, Michigan, USA	Community	41; no details	Qual	Holga cameras	SHOWeD	N/A; two cases were provided.	N/A
Bader et al., 2007 <sup>29</sup>	Community issues	Bedouin, Middle East	Community	20; 10 boys, 10 girls	Qual & Quan	N/A	N/A	Smoking, drugs, violence, safe play areas, and suicide.	Video, photo exhibit
Ip, 2007 <sup>31</sup>	Health problems	Inuvik, Northwest Territories, Canada	Community	35; aged 10-22	Qual	Disposable cameras	N/A	Specific health concerns: smoking, alcohol and drug abuse, and teen pregnancy.	19-minute video
Wilson et al., 2007 <sup>33</sup>	Risk behaviors	West Contra Costa County, California, USA	School	122; aged 9-12; 57 boys, 65 girls	Qual	Non-disposable cameras	SHOWeD	Students need more attention at school; people need alternatives to fighting; peer pressure to use drugs.	Photo exhibit
Umurungi et al., 2008 <sup>36</sup>	Safety and security	Ruhengeri, Rwanda	A center to support street girls	16; aged 11-14; all girls	Qual	Disposable cameras	SHOWeD	Unsafe spaces; safe spaces.	N/A
Foster-Fishman et al., 2010 <sup>30</sup>	Community problem	A Midwestern city in USA	Community and school	19; aged 12-13; 68% females	Qual	N/A	N/A	Youth's concern about the environment; safe and drug-free neighborhoods.	Photo exhibit

Author(s), Year	Topic	Location	Study Setting	Participants	Study Design	Equipment	Discussion Guideline	Main Themes	Photo Exhibit
Brazg et al., 2011 <sup>7</sup>	Substance abuse	Western Washington State, USA	Community	9; 11th-12th grades; 3 males and 6 females	Qual	Personal digital cameras	SHOWeD	Individual, Family, school or community level factors that influence substance use.	Photo exhibit
Ho et al., 2011 <sup>23</sup>	Community conditions	Hong Kong, China	Community and school	54; aged 12-17; 63% females	Qual & Quan	Disposable cameras	Other	Neighborhood safety, community facilities, facility quality, and facility sufficiency.	N/A
Tanjasiri et al., 2011 <sup>34</sup>	Tobacco use	California and Washington, USA	Community	32; aged 14-18	Qual	Digital cameras	SHOWeD	Physical characteristics of distressed communities, community poverty, and community violence.	N/A
Wallace & McLauchlan, 2012 <sup>27</sup>	Health issues in the community	Chişinău, Moldova	Community and school	13; aged 10-17	Qual	Personal digital cameras or smart phones	SHOWeD	Abundance of garbage in public spaces; individuals engaging in risky health behaviors (cigarette smoking and alcohol use); poor road and sidewalk conditions.	N/A; photo sharing and sorting as a group
Watson & Douglas, 2012 <sup>39</sup>	Mental health	Aberdeen, Scotland	Community	9; aged 12-19	Qual	Disposable cameras	SHOWeD	Individual and collective access to various forms of capital; safety concerns.	N/A
Chonody et al., 2013 <sup>9</sup>	Violence	Philadelphia, USA	Community	10; aged 12-19	Qual	Digital cameras	SHOWeD	Representations of violence causes of violence, and ways to address violence.	Presentation

Author(s), Year	Topic	Location	Study Setting	Participants	Study Design	Equipment	Discussion Guideline	Main Themes	Photo Exhibit
Tanjasiri et al., 2013 <sup>35</sup>	Tobacco use	California and Washington, USA	Community and organization	32; aged 14-18	Qual & Quan	N/A	SHOWeD	Youth-targeted cigarette advertisements, and poor physical appearance of their community.	N/A
Kovacic et al., 2014 <sup>25</sup>	Environmental influence on health	Cincinnati, Ohio, USA	Community and service agency	10; aged 8-13	Qual	Digital cameras	SHOWeD	Poor eating habits/inadequate nutrition; safety/violence; family/friends/community support.	Photo exhibits, colored newsletters
Mmari, Blum, et al., 2014 <sup>26</sup>	Perceived health and influential factors	Baltimore, Maryland, USA; Johannesburg, South Africa; Shanghai, China; New Delhi, India; Ibadan, Nigeria	Community	About 10 in each site; aged 15-19	Qual & Quan	N/A	SHOWeD	Health challenges among male: tobacco, drug, and alcohol; personal safety; among female, sexual and reproductive health problems, safety; physical and social environment.	N/A
Mmari, Lantos, et al., 2014 <sup>15</sup>	Perceived health and environment	Baltimore, Maryland, USA; Johannesburg, South Africa; Shanghai, China; New Delhi, India; Ibadan, Nigeria	Community	About 10 in each site; aged 15-19	Qual & Quan	N/A	N/A	Perceived health outcomes related to the physical environment varied by site and gender.	N/A

Author(s), Year	Topic	Location	Study Setting	Participants	Study Design	Equipment	Discussion Guideline	Main Themes	Photo Exhibit
Schuch et al., 2014 <sup>32</sup>	Community health	Charlotte, North Carolina, USA	Community	24; 13 high school students and 11 college students	Qual	Digital cameras	SHOWeD	Poor pedestrian access, inadequate property maintenance, pollution, evidence of gangs, criminal activity, and vagrancy.	Photo exhibit
Helm et al., 2015 <sup>10</sup>	Substance use	Hawaii, USA	Community	10; aged 12-18; 6 girls and 4 boys	Qual	Digital cameras	SHOWeD	The tie between the natural environment, individual and community well-being; challenges and social conflicts; drug use.	Community celebration
Robson et al., 2016 <sup>37</sup>	The influences of structural violence	South-central Ontario, Canada	Community	6; aged 16-20	Qual	N/A	N/A	NA; no specific thematic analysis about photovoice.	N/A; photo selection
Leung et al., 2017 <sup>38</sup>	Community health perceptions	Beijing, China	Community and school	12; migrant youth aged 11-12	Qual	Disposable cameras	SHOWeD	Personal safety (pedestrian safety, excess garbage), nutrition, and physical activity.	N/A
Irby et al., 2018 <sup>24</sup>	Perception of violence	Forsyth County, North Carolina, USA	Community and organization	10; adolescents	Qual	Personal smart phones	N/A	11 themes emerged relevant to the adolescents' critical evaluation of the causes, consequences, and correlates of violence.	Photo exhibit, community forum, video

<b>Author(s), Year</b>	<b>Topic</b>	<b>Location</b>	<b>Study Setting</b>	<b>Participants</b>	<b>Study Design</b>	<b>Equipment</b>	<b>Discussion Guideline</b>	<b>Main Themes</b>	<b>Photo Exhibit</b>
Groenewald et al., 2018 <sup>28</sup>	Risk behaviors	KwaZulu-Natal Province, South Africa	Community	33; aged 15-18; grades 8-12	Qual	Disposable cameras	N/A	Adolescent substance misuse and risky sexual behaviors; a link between youth substance use and violent behaviors.	N/A
Petteway et al., 2019 <sup>11</sup>	Tobacco use	Southwest Baltimore, Maryland, USA	Community and school	14; grades 5-8	Qual	Digital cameras	SHOWeD and PHOTO	Harmful nicotine, tobacco and community health, marketing, and prevention and help.	Photo exhibits in community and City Hall