



# The effectiveness of community-based social innovations for healthy ageing in middle- and high-income countries: a systematic review

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## Abstract

**Objectives:** Community-based social innovations (CBSIs) are one type of intervention that may help to address the complex needs of ageing populations globally. The aim of this research was to assess evidence for the effectiveness and cost-effectiveness of CBSIs involving in such contexts.

**Methods:** We conducted a systematic review of CBSIs for healthy ageing in middle- and high-income countries, including any CBSI that aimed to empower people aged 50 and over by motivating them to take initiative for their own health and wellbeing. The protocol was registered with Prospero (CRD 42016051622). A comprehensive search was conducted in 15 academic databases and advanced search in Google. We included published studies from 2000 onwards in any language. Exploratory meta-analysis was conducted for quantitative studies reporting similar outcomes, and qualitative studies were analysed using thematic analysis. Narrative synthesis was conducted. Searches yielded 13,262 unique hits, from which 44 papers met the inclusion criteria.

**Results:** Most studies reported interventions having positive impacts on participants, such as reduced depression, though the majority of studies were classified as being at medium or high risk of bias. There was no evidence on costs or cost-effectiveness and very little reporting of outcomes at an organization or system level. CBSIs have the potential for positive impacts, but with nearly half of studies coming from high-income urban settings (particularly the United Kingdom and the United States of America), there is a lack of generalizability of these findings.

**Conclusions:** Our research highlights the need to improve reporting of CBSIs as complex interventions, and for improved conceptualization of these interventions to inform research and practice.

## Keywords

ageing, community-based, systematic reviews

## Background

Globally, around 962 million people (2017), or 13% of the population, are aged over 60.<sup>1</sup> Already in regions such as Europe, over a quarter of the population is in this age group and it is estimated that this will be the case in all world regions by 2050.<sup>1</sup> This highlights the need for health and social care systems to adapt to meet the complex needs of older people.<sup>2</sup>

Health systems have typically been designed to meet largely acute needs. This has led, especially in middle-income countries, to a lack of provision or barriers to access for many older people who do not qualify for acute treatment but nevertheless require frequent

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and resource-intensive care.<sup>2</sup> In response to these challenges, a number of reports<sup>3,4</sup> have highlighted the need for research into new ways providers can work together to provide health and social care to older people. Community-based social innovations (CBSIs) are one type of innovation that may help to address the needs of older people that are not currently met through formal systems of health and social care. In the context of ageing, CBSIs can be understood as initiatives that seek to empower older people to improve self-efficacy in caring for themselves and their peers, with the aim of maintaining wellbeing through promoting social cohesion and inclusiveness.<sup>4</sup>

Previous research and consultations, led primarily by the World Health Organization (WHO) and focused on low-income countries, have helped to define CBSIs and have outlined three main principles underpinning these innovations, namely the empowerment of older people to care for themselves where possible; a focus on social inclusion; and the maintenance of wellbeing within disease, disability and declining health.<sup>4</sup> In relation to health, the work by the WHO has highlighted that CBSIs have the potential to reduce costs and improve care for older people, to help to fill gaps in vertical health and care systems, and to improve autonomy and empower older people to make their own decisions over their health and daily living.<sup>4</sup> These conclusions were not, however, based on robust evaluative research, highlighting the need to strengthen the evidence base around CBSIs. While systematic reviews are available for community-based interventions in relation to health and ageing,<sup>5,6</sup> our focus on CBSIs with the underpinning ethos of empowerment, social inclusion and maintenance of wellbeing is original. It is particularly timely to assess the evidence base for CBSIs, as the policy agenda in many countries is moving towards one where factors such as social isolation have prominence in relation to health<sup>7</sup> and new models of care are seeking innovative ways of working with third sector and community organizations.<sup>8</sup> It is also important to ascertain to what extent there is common experience in the types of CBSIs and therefore potential for lessons to be drawn across middle- and high-income country settings. To our knowledge, there is no published systematic review that attempts to synthesize evidence around CBSIs in these settings, and this is the first systematic review of CBSIs for all older people whatever their health status.

## Aims

We conducted a systematic review on CBSIs for healthy ageing in middle- and high-income countries and in doing so provide an overview of included studies, assessment of quality of research, account of

reported outcomes and synthesis of evidence around effectiveness and cost-effectiveness of CBSIs.

## Methods

The protocol for this systematic review was registered with the PROSPERO database (CRD 42016051622).

### *Inclusion criteria*

The pre-specified participant(s) and setting(s), intervention(s), comparison(s), outcome(s) and study design(s) (PICOS) criteria are detailed in Table S1 (Online Supplement 1). We used the definition of CBSIs as initiatives that seek to empower older people to improve their self-efficacy in caring for themselves and their peers, with the aim of maintaining their wellbeing through promoting social cohesion and inclusiveness.<sup>4</sup> To differentiate from other health and social care-led interventions, we excluded those that were solely implemented by health service or social care staff and those where there was no evident community responsibility or engagement. A minimum one year of intervention duration was chosen in order to find sustainable interventions. The year 2000 was chosen based on knowledge of the evolution of CBSIs and to make the report relevant to the present-day health policy and demographic context.

### *Search strategy*

The following databases (and platforms) were searched between October and November 2016: MEDLINE (OVID), Academic Search Complete, CINAHL (EBSCO), ERIC (EBSCO), PsychInfo (EBSCO), Social Science Abstracts, Embase (Elsevier), PAIS International, Web of Science, SCOPUS, PolicyFile, Sociological Abstracts, JSTOR, ClinicalTrials.gov and Dissertations Abstracts. An Internet search was performed using advanced Google. Therefore, the search strategy captured both academic and grey literature. Searches used combinations of Medical Subject Headings (MeSH) terms and keywords. Search strategies for the databases are presented in Table S2 (Online Supplement 1). Reference lists of relevant systematic reviews and included studies were checked for additional studies.

### *Study selection*

Two reviewers (IG and LL) independently scrutinized all titles and abstracts, with each scrutinizing half, and a third reviewer (CMi) cross-checked 20% of them. Next, three reviewers (IG, LL and CMe) independently screened full texts of all potentially eligible studies

against the predefined criteria. At each stage, disagreements were resolved by consensus among researchers.

### Data extraction

Extraction tables were designed and piloted (online Supplement 1). They captured details on participants, intervention, comparator, outcomes and study design. Numerical results were extracted for quantitative outcomes and narrative accounts, and supporting quotes were recorded for qualitative outcomes. Each study's findings were extracted by one reviewer (IG or LL), and each reviewer checked the other's extracted data.

### Assessment of risk of bias

The quality assessment of quantitative studies was based on evaluation of selection, performance, attrition rates and detection of biases. The quality assessment of the qualitative studies was based on the Critical Appraisal Skills Programme (CASP) qualitative research assessment checklist.<sup>9</sup> Assessment decisions were based on discussions between IG and LL, which considered all checklist domains as well as the overall trustworthiness of results using the methodology described in Shenton.<sup>10</sup>

### Evidence synthesis

The results are presented in narrative form with data presented in tables (online Supplement 1). Exploratory meta-analysis was conducted for studies where similar outcomes were reported, using standardized mean differences because of the heterogeneity of outcome measures, and random effects models because of the heterogeneity of study populations, interventions and comparators. Studies that used qualitative research methods were synthesized based on thematic analysis. This three-step process described in Thomas and Harden<sup>11</sup> involves coding 'line-by-line' from the findings of qualitative studies, generating descriptive themes or categories that remained close to the manifest content, and developing analytical themes that capture latent meaning. IG and LL performed the coding. IG generated the descriptive and analytical themes, which were discussed and further refined by IG and EP.

## Results

Searches yielded 23,337 titles and abstracts. After removing duplicates, 13,262 remained, of which 13,007 were excluded based on the title and abstract. The majority of screened studies were in English, which may have in part resulted from the search terms being in English. Full papers for 255 articles were assessed for inclusion (Figure S1, online Supplement 2), of which

44 papers, all published in English, met the inclusion criteria. A full list of excluded and included studies is provided in Tables S3 and S4 (online Supplement 1).

### Description of included studies

**Participants.** The number of participants varied between 8 and 1783. Most studies (28/44) included participants that were all older than 65, and mean ages, where given, ranged from 60.2 to 78.9 years. Most of the studies were conducted in high income country populations, and nearly half (20/44) were conducted in populations from just two countries: the UK (9 studies) and the USA (11 studies). Details of participants' characteristics are presented in Table S5 (Online Supplement 1).

From the 44 included studies, only 16 recorded participants' health conditions. Four studies included participants with a combination of diseases, five with mental health problems, three with dementia, and one with each of HIV, ischaemic heart disease, breast cancer surgery and diabetes. Only 19 studies reported the ethnicity of participants, and three did not report the gender of participants. While not extracted in Table S5, there was little data across all studies on the educational level of participants, economic situation, family status (with family, divorced, widowed, living with children, etc.) and access to certain services (e.g. social services).

**Interventions and comparators.** The wide range of interventions described in the studies is summarized in Table S6 (Online Supplement 1), along with their comparators. There is very little similarity between these complex interventions or their comparators so any attempt to combine interventions in the form of meta-analysis is exploratory at best.

**Outcomes.** The quantitative studies reported a very wide range of outcomes including:

- Clinical measurements e.g. BMI, biochemical and haematological measures
- Psychological health
- Quality of life
- Wellbeing
- Performing activities e.g. walking, gardening, exercise
- Knowledge e.g. dietary management
- Social support and social skills
- Autonomy and empowerment
- Fall incidence
- Resource use, e.g. hospital bed days, costs

A comparative analysis of these quantitative outcomes shows that there is some limited commonality of outcome reporting across the studies (Table S7, online Supplement 1).

The qualitative studies focused on the following outcomes, as summarized in Table S8 (online Supplement 1):

- Social interaction (avoiding isolation)
- Sense of health and wellbeing
- Mental health
- Learning new skills
- Resilience
- Satisfaction with the CBSI services

We considered several types of outcomes, which were initially categorized according to level of impact: (1) citizen, (2) organizational (CBSI) and (3) system (social care, hospital care or other health services). All included studies (both quantitative and qualitative) reported outcomes at the citizen level. One study<sup>12</sup> presented outcomes, such as uptake of an influenza vaccination and eyesight tests, which could be interpreted as system outcomes. No study presented organizational outcomes, such as sustainability, costs or cost-effectiveness.

**Study designs.** Thirty-one studies reported quantitative results and 20 reported qualitative results (7 studies reported both). The study designs for quantitative studies were 2 cluster RCTs, 4 RCTs, 1 controlled trial, 1 matched cohort, 7 controlled cohort, 8 cohort, 1 case control, 2 case series with historical control, 1 cross-sectional survey with concurrent control and 4 cross-sectional survey with historical control. In several of the included papers, the study design was not well reported. For example, a case series study of the impacts of an intergenerational and intercultural project connecting students and older people through language learning did not provide enough information about its study design for reviewers to assess the risk of performance bias, attrition bias or detection bias.<sup>13</sup> Similarly, two cohort studies – one matched<sup>14</sup> and one with a historical control<sup>15</sup> – did not provide enough information for reviewers to assess the risk of two out of the three aforementioned sources of bias. Most of the qualitative studies were interview studies with some focus groups, open-ended questions in surveys and participant observation. As with the quantitative studies, there were several weaknesses in how the qualitative study designs were reported. Two provided insufficient information for reviewers to determine whether the research design was appropriate for addressing the associated research aims,<sup>15,16</sup> seven provided insufficient information about the recruitment

strategy to determine whether an appropriate approach was employed,<sup>16–22</sup> and four provided insufficient information about the data collection strategy to determine the same.<sup>13,15,18,23</sup>

### Quality assessment of included studies

The vast majority of the studies were classified as having either medium (18 studies) or high (14 studies) risk of bias. It is important to note that most studies gave insufficient details to allow us to assess all aspects of quality, so our classification may not be accurate. Details of quality assessment are provided in Tables S9 and S10 (online Supplement 1).

### Impact of the interventions

In terms of effectiveness, most studies reported that the interventions had positive impacts on the participants. Statistically significant results demonstrating improvement in outcomes for the intervention compared to control groups were shown in the following studies: Cohen et al.<sup>24</sup> – a variety of physical and mental health indicators, Cohen-Mansfield et al.<sup>25</sup> – mental health and social life, Cordella et al.<sup>13</sup> – satisfaction, Coull et al.<sup>26</sup> – exercise, diet and health service use, Creech et al.<sup>27</sup> – relatedness, Droes et al.<sup>28</sup> – inactivity, non-social and depressive behaviours, Even-Zohar<sup>29</sup> – quality of life, Greaves and Farbus<sup>30</sup> – quality of life, social support, Hillman<sup>31</sup> – quality of life and wellbeing, Ho<sup>32</sup> – perceived health status and wellbeing, Paul et al.<sup>15</sup> – quality of life, Phelan et al.<sup>33</sup> – health, wellbeing and physical inactivity, et al.<sup>34</sup> – physical fitness and Wurzer et al.<sup>35</sup> – fewer falls. However, the quality of evidence supporting effectiveness varied, limiting the degree of attribution between intervention and outcomes.

Table S11 (online Supplement 1) shows the analysis of whether meta-analysis was possible from included studies with numerical results. It was possible to conduct exploratory meta-analyses for two of the outcomes – depression and social support (Figure S2 and Figure S3, online Supplement 2).

The results suggest that there is insufficient evidence to demonstrate that CBSIs were associated with any improvement in social support, but they show a small reduction in depression at follow up (SMD = -0.70 (95% CI -1.34 to -0.06)). However, the interventions and outcome results were too heterogeneous to warrant further inference from these exploratory meta-analyses. For both the depression and social support meta-analyses, the outcomes used in individual studies were dissimilar to each other in the way in which they were measured, hence the high heterogeneity of the results.

It is important to note here that the number of studies not contributing to the meta-analysis was significant, as can be seen in Figures S2 and S3 (online Supplement 2). The majority of studies did not provide an estimate of the measure of spread (standard deviations, ranges or inter-quartile ranges) for both the intervention and control arms, and it was therefore not possible to generate standardized mean differences for these studies. These studies have been left in the meta-analyses to highlight that the summary standardized mean differences are generated from a very small subset of the included studies, so are unlikely to be representative of the overall body of evidence. Only 5 out of the 11 studies included in the depression meta-analysis contributed standardized mean differences, and the same was true for just 4 out of the 9 studies that measured social support. This may have contributed to the findings, and it is possible that the results of the meta-analysis are not representative of the entire body of evidence identified for inclusion in this review.

### Thematic analysis

Through our thematic analysis of the 20 studies using qualitative research methods, we identified a number of descriptive themes that we grouped into four analytical themes (Table S12, online Supplement 1). It is worth noting that most of the papers for which qualitative results were extracted are on involved interventions in high-income countries.

*Analytical Theme 1: CBSIs gave a sense of togetherness by fostering social interaction.* This analytical theme came through strongly in almost all of the included papers (19/20). The strongest evidence within the selected studies, based on number of papers and assessment of quality, shows that CBSIs can bring about a sense of companionship and camaraderie, for example the shared experience and mutual support gained from a men's cooking group activity.<sup>36</sup> This finding was identified for CBSIs operating in a wide range of settings and samples of participants.

Twelve studies reported that CBSIs helped beneficiaries avoid social isolation and loneliness, for example workshops and psychological support groups for older persons affected by a particular life situation, e.g. 'Grandmothers against poverty and AIDS'.<sup>23</sup>

The studies that contributed to the overall theme of fostering social interaction varied when it came to assessment of bias (five assessed as being at low risk<sup>17,30,37-39</sup> seven medium<sup>20-22,36,40-42</sup> and seven high<sup>13,15,16,18,23,32,43</sup>).

*Analytical Theme 2: CBSIs were seen as contributors to improved health and sense of wellbeing.* Nine papers presented findings which revealed positive impacts on health and wellbeing (three assessed as being at low risk of bias,<sup>17,30,39</sup> three medium<sup>20,36,41</sup> and three high<sup>16,19,23</sup>). Greaves et al.<sup>30</sup> found a series of health and wellbeing-related outcomes for participants in the 'Upstream Healthy Centre'. The intervention for older socially isolated people involved visits and telephone contacts from mentors and led to improved mental health, increased physical activity, improved cognitive awareness, reduced risk of falls, better sleep and improved health behaviours. Four papers (three assessed as being at low risk of bias<sup>17,30,39</sup>) reported improvements in mental health, for example Dickson et al.,<sup>39</sup> who evaluated a health promotion project for older Aboriginal women. The project activities included morning get-togethers, home meetings, participation in community committees, community development workshops and special celebrations. The study found that the participation in the CBSI had a therapeutic effect through providing an opportunity for participants to give each other psychological support and act as mentors and counsellors.

Increased physical activity was also reported in four interventions, for example 'Men in Sheds', which provided spaces in the form of sheds for older men to meet, teach and learn new skills, and participate in 'do-it-yourself' activities,<sup>16</sup> and the Silver Song Club project, a community-based initiative for older persons to come together and sing.<sup>20</sup>

*Analytical Theme 3: CBSIs were equipping participants with new skills that enabled independence and empowerment.*

Eleven studies reported that CBSI attendance was linked to increasing the desire and ability to do other activities outside of that offered within the CBSIs, enhancing the enjoyment of life, equipping older people with new skills, making for a rewarding experience accompanied by a sense of empowerment and achievement, and gaining independence. All these studies described CBSIs as environments that equip participants with new skills that enable independence and empowerment. None of the findings from the three middle-income countries (South Africa, Brazil and India) contributed to this theme, as these interventions were geared towards offering peer support and increasing engagement in pleasurable activities among participants who were for the most part already quite self-sufficient, rather than seeking to increase the independence of older people. The strength of evidence that built this analytical theme varied (three assessed as being at low risk,<sup>30,37,38</sup> five medium<sup>20-22,36,41</sup> and three high<sup>18,19,43</sup>).

*Analytical Theme 4: CBSIs contributed to individual and community resilience.* Emerging from 11 of the articles was the role of CBSIs as contributors to individual and community resilience. The ‘Grandmothers against poverty and AIDS’ initiative included workshops and psychological support groups,<sup>23</sup> through which some participants learned new practical skills (sewing and gardening) that they could apply to manufacture handicrafts for sale.<sup>23</sup> There were a higher number of studies that mentioned CBSIs’ contributions to the dignity and self-respect of older persons, which in turn led to self-confidence and reliance on one’s own abilities. Some of the CBSIs were also reported to have resulted in increased optimism and improved outlook on life in general. Three articles showed community level benefits in the form of social support. Ho et al.<sup>32</sup> described how, through a peer counselling initiative which included retirees, a support network was formed leading to a feeling of ‘extended family’. There was also a descriptive theme of feeling strong and not wanting to give up, describing a state of individual resilience that was linked to participating in various CBSIs.

The papers that helped build this theme also varied in strength of evidence (three studies assessed as low risk,<sup>30,38,39</sup> three medium<sup>21,22,42</sup> and five high<sup>13,15,19,23,32</sup>).

## Discussion

Our systematic review included 44 studies and showed that there is existing literature from which to draw limited lessons around CBSIs for healthy ageing in middle- and high-income countries. Most studies reported that the interventions had some positive impacts on the participants, but incomplete reporting and/or high risk of bias made these outcomes hard to interpret. CBSIs were also often poorly described, as were the participants. Exploratory meta-analysis was conducted for the outcomes of social support and reduction in depression, the two most commonly reported outcomes, and showed no difference in social support but a small reduction in depression. The interventions and outcomes, however, were too heterogeneous for these summary results to be generalizable. Furthermore, it is unclear whether the identified lack of difference in social support was due to too few of the included studies reporting estimates of the measure of spread for both the intervention and control arms, thereby limiting the number of studies for which standardized mean differences could be calculated and included in the meta-analysis. The qualitative analysis highlighted that from the perspective of older people themselves, CBSIs may have the potential to impact either directly on improved health (physical and mental) or indirectly through enhanced wellbeing, increased social

interaction and greater empowerment. It is notable, however, that few studies were considered to be of high quality. All included studies focused at the level of the individual, with little consideration of organizational factors and no analysis of cost-effectiveness. The only reporting of outcomes at organization or system level was on uptake of an influenza vaccination and eyesight tests. Furthermore, most of the studies came from high-income settings, and nearly half (20/44) came from just two countries, the UK (9 studies) and the USA (11 studies), which has implications for the generalizability of the findings.

CBSIs have received attention because of their potential to lead to cost-effective scalable solutions and to filling gaps in vertical healthcare systems.<sup>4</sup> Our review shows that the types of outcomes and areas of benefit being suggested are consistent with wider discourses around older people and healthy ageing.<sup>2</sup> The evidence to support cost-effectiveness in relation to these, however, needs to be strengthened. There may be an inherent assumption, as in other areas of community provision of services, that CBSIs are cost saving to health and social care systems, but this may not be the case and it will be important to ascertain this through rigorous research, including consideration of wider societal costs.<sup>44</sup>

There are also important questions to consider with regard to sustainability of CBSIs as a way of addressing gaps in current health and social systems. Recent examination of older people’s associations across four countries,<sup>45</sup> confirms previous research around CBSIs, that such initiatives should not be thought of as alternatives to health and social care services but that cooperation between a range of services and agencies will be important.<sup>4</sup>

Overall, the systematic review of CBSIs highlights diversity in types of interventions. An overarching label such as ‘CBSI’ brings value if it can allow individual examples of innovation to be grouped in order to strengthen the inference that can be drawn from evaluations. As yet there is a lack of a conceptual framework that can help to advance this. There is, however, existing literature that can inform this. For example, more broadly in public health, the importance of making a distinction between ‘community-based’ and ‘community-level’ interventions has been made, with the former referring to interventions targeting individual-level change and the latter seeking community-wide change.<sup>46</sup> The studies in our review show that most CBSIs are consistent with a ‘community-based’ approach, or at least that individual level outcomes were being used to evaluate the interventions. As mentioned above and shown in Tables S7 and S8, all included studies measured and reported individual level outcomes. Yet, the notion of ‘social innovation’

although underdeveloped in relation to health is more commonly associated with seeking to bring social change and a new way of doing things.<sup>47</sup> The current definition of CBSIs also emphasizes social cohesion and inclusion, which may be more consistent with 'community-level'. It is likely that CBSIs may exist on a continuum between these but understanding some of these underlying principles will help in the selection of appropriate outcomes, evaluation approach and future reviews of evidence.

Furthermore, CBSIs represent complex interventions that should be understood within particular social contexts. As such, evaluation approaches not identified through this systematic review, including realist or theory based approaches,<sup>48</sup> may be valuable to understand the complex interactions between interventions, wider health and social care systems, and broader social and political contexts and to examine how these interactions affect the desired impact and outcomes. More broadly, reporting of CBSIs should be improved along the lines advocated for complex health interventions.<sup>49</sup>

### Strengths and limitations of our approach

To our knowledge, this is the first systematic review of CBSIs for all older people whatever their health status. The main strength of the review lies in its comprehensiveness. The search strategy was designed to be inclusive rather than exclusive and as such incorporated a large number of studies from both academic and grey literature. The exploratory meta-analyses highlight the difficulties of assessing numerical results in these interventions. The term 'community-based social innovation' is rarely used in the literature. Instead we used key underpinning criteria to identify potentially eligible studies, which required an element of judgement in deciding whether programmes constituted CBSIs. As a result, we may have missed eligible studies if the intervention description in the paper did not fully bring out issues of empowerment, self-efficacy and social cohesion. To compensate, we sifted through large numbers of full texts because abstracts tend not to be clear about these aspects of interventions. Further conceptual development of the term would be helpful in making these judgements. There were four studies (mainly dissertations) for which we were not able to access the full text, and it is not clear how these would have differed from the included studies. Finally, it is not clear whether the aforementioned country bias is indicative of a more mature research field in these countries, that more CBSIs are in place in these countries or whether our search has in some way skewed the results despite the inclusion of studies in any language. We know from other topic areas that nationally significant journals

in middle-income countries may not be covered in international databases.<sup>50</sup>

## Conclusion

Community-based social innovations (CBSIs) offer a means to improve health and wellbeing among older people. The current reporting gives an insight into the types of outcomes that may be important for older people, but not the strength of evidence to reach conclusions on effectiveness or cost-effectiveness. There is very little reporting of outcomes at an organization or system level which means that there is limited understanding of the role of such initiatives within the broader health or social care system. There is a need to improve the reporting of CBSIs as complex interventions and for improved conceptualization of these interventions to inform research and practice.

## Authors' note

Ioana Ghiga is now a Technical Officer at World Health Organization, Geneva Switzerland.

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## Supplemental Material

Supplemental material for this article is available online.

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