Journal of Physical Activity and Health, 2023, 20, 10-19
https://doi.org/10.1123/jpah.2022-0357

Human Kinetics
ORIGINAL RESEARCH

Advocating for Implementation of the Global Action Plan on Physical Activity: Challenges and Support Requirements

Joey Murphy,[1] Karen Milton,[2] Matthew Mclaughlin,[3] Trevor Shilton,[4,5] Gabriella M. McLoughlin,[6,7] Lindsey J. Reece,[8] Jacqueline L. Mair,[9,10] Artur Direito,[11] Katharina E. Kariippanon,[12] Kelly J. Mackenzie,[13] Myrto F. Mavilidi,[14] Erin M. Shellington,[15] Masamitsu Kamada,[16] Leonie Heron,[17] Edtna Jauregui,[18] Chalchisa Abdeta,[12] Ilaria Pina,[19] Ryan Pinto,[20] and Rachel Sutherland[21]

[1]Centre for Exercise, Nutrition & Health Sciences, School for Policy Studies, University of Bristol, Bristol, United Kingdom; [2]Norwich Medical School, University of East Anglia, Norwich, United Kingdom; [3]Telethon Kids Institute, Perth, Australia & School of Population and Global Health, The University of Western Australia, Perth, WA, Australia; [4]School of Public Health, Curtin University, Bently, WA, Australia; [5]National Heart Foundation of Australia, Subiaco, WA, Australia; [6]College of Public Health, Temple University, Philadelphia, PA, USA; [7]Implementation Science Center for Cancer Control and Prevention Research Center, Brown School, Washington University in St. Louis, St. Louis, MO, USA; [8]Prevention Research Collaboration, Charles Perkins Centre, University of Sydney, Sydney, NSW, Australia; [9]Future Health Technologies, Singapore-ETH Centre, Campus for Research Excellence and Technological Enterprise (CREATE), Singapore, Singapore; [10]Saw Swee Hock School of Public Health, National University of Singapore, Singapore, Singapore; [11]Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore; [12]Early Start, School of Health and Society, Faculty of the Arts, Social Science and Humanities, University of Wollongong, Wollongong, NSW, Australia; [13]School of Health and Related Research, University of Sheffield, Sheffield, United Kingdom; [14]Early Start, School of Education, University of Wollongong, Wollongong, NSW, Australia; [15]Legacy for Airway Health, Division of Respiratory Medicine, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada; [16]Department of Health Education and Health Sociology, School of Public Health, Graduate School of Medicine, The University of Tokyo, Bunkyo-ku, Japan; [17]Institute of Social and Preventive Medicine, University of Bern, Bern, Switzerland; [18]Health Sciences University Center, University of Guadalajara, Guadalajara, Mexico; [19]School of Biomedical Sciences, Faculty of Biological Sciences, University of Leeds, Leeds, United Kingdom; [20]Wolf Orthopaedic Biomechanics Laboratory, Fowler Kennedy Sport Medicine Clinic, University of Western Ontario, London, ON, Canada; [21]School of Medicine and Public Health, Faculty of Health and Medicine, University of Newcastle, Callaghan, NSW, Australia

Background: There is limited understanding of the challenges experienced and supports required to aid effective advocacy of the Global Action Plan on Physical Activity (GAPPA). The purpose of this study was to assess the challenges experienced and supports needed to advocate for the GAPPA across countries of different income levels. ***Methods:*** Stakeholders working in an area related to the promotion of physical activity were invited to complete an online survey. The survey assessed current awareness and engagement with the GAPPA, factors related to advocacy, and the perceived challenges and supports related to advocacy for implementation of the GAPPA. Closed questions were analyzed in SPSS, with a Pearson's chi-square test used to assess differences between country income level. Open questions were analyzed using inductive thematic analysis. ***Results:*** Participants (n = 518) from 81 countries completed the survey. Significant differences were observed between country income level for awareness of the GAPPA and perceived country engagement with the GAPPA. Challenges related to advocacy included a lack of support and engagement, resources, priority, awareness, advocacy education and training, accessibility, and local application. Supports needed for future advocacy included guidance and support, cooperation and alliance, advocacy education and training, and advocacy resources. ***Conclusions:*** Although stakeholders from different country income levels experience similar advocacy challenges and required supports, how countries experience these can be distinct. This research has highlighted some specific ways in which those involved in the promotion of physical activity can be supported to scale up advocacy for the GAPPA. When implementing such supports, consideration of regional, geographic, and cultural barriers and opportunities is important to ensure they are effective and equitable.

Keywords: advocacy, country income level, quantitative, qualitative

Regular physical activity (PA) reduces the risk of noncommunicable diseases such as cardiovascular disease, type 2 diabetes mellitus, and certain cancers,[1] preventing around 3.9 million premature deaths annually,[2] and contributes positively to most of the United Nation's Sustainable Development Goals.[3,4] In 2020, the World Health Organization (WHO) published guidelines on PA and sedentary behavior for various population groups, recommending children and adolescents be active at a moderate to vigorous

Milton https://orcid.org/0000-0002-0506-2214
Mclaughlin https://orcid.org/0000-0003-2870-8556
Shilton https://orcid.org/0000-0002-8978-3261
McLoughlin https://orcid.org/0000-0002-7731-2382
Reece https://orcid.org/0000-0003-2883-3963
Mair https://orcid.org/0000-0002-1466-8680
Direito https://orcid.org/0000-0002-2236-8506
Kariippanon https://orcid.org/0000-0003-4269-682X
Mackenzie https://orcid.org/0000-0002-8431-0465
Mavilidi https://orcid.org/0000-0003-2661-8709
Kamada https://orcid.org/0000-0003-1703-076X
Heron https://orcid.org/0000-0002-3820-3343
Jauregui https://orcid.org/0000-0002-8136-3844
Abdeta https://orcid.org/0000-0001-6402-9732
Pina https://orcid.org/0000-0002-6294-5398
Pinto https://orcid.org/0000-0001-9660-7445
Murphy (joey.murphy@bristol.ac.uk) is corresponding author, https://orcid.org/0000-0003-4340-645X

intensity for an average of 60 minutes per day and adults be active at a moderate intensity for at least 150 to 300 minutes each week.[5] Achievement of such guidelines in the whole adult population is estimated to increase global gross domestic product by between $314 and $446 billion by 2050.[6]

Despite the benefits of PA, the proportion of populations meeting PA guidelines is concerning. Recent surveillance data show that globally 81% of adolescents (11–17 y)[7] and 27.5% of adults[8] are considered insufficiently active (ie, not meeting PA guidelines). Further exploration of the data shows that adults from higher-income countries tend to be more physically inactive[8] and report higher levels of sedentary behavior[9] than lower-income countries. Adults from lower-income countries engage in more occupational and/or domestic PA than those from other country income levels.[10]

In 2018, the WHO published the Global Action Plan on Physical Activity (GAPPA),[11] which set a global target to reduce physical inactivity by 15% by 2030. The GAPPA recommends 20 policy actions to support increasing population levels of PA and states that "all stakeholders should actively promote and advocate for the implementation of the policy actions according to country contexts and priorities."[11(p43)] The WHO defines advocacy for health as "a combination of individual and social actions designed to gain political commitment, policy support, social acceptance and systems support for a particular health goal or program."[12] This definition highlights the central purpose of advocacy in mobilizing systems change and policy support for implementation. Advocacy involves creating conditions for change by influencing key stakeholders at multiple levels, including targeting decision makers directly to bring about policy change and mobilizing support for change through other stakeholders such as the media, community, and professionals.[13,14]

The WHO's emphasis on the need for advocacy builds on earlier work which highlighted advocacy as a priority strategy for those seeking to promote PA globally, across low-income (LIC), lower–middle income (LMIC), upper–middle income (UMIC), and high-income countries (HIC)[15]; a sentiment which is also endorsed by the International Society for Physical Activity and Health (ISPAH).[16] It is widely accepted that there is no single approach to encourage populations to be more active; rather a coordinated set of actions are required across multiple sectors.[16] Such actions could include workforce capacity building in PA, building supportive environments, strengthening institutions and leadership for PA, and identifying sources for sustainable financing for implementation.[17,18] This emphasizes the importance of having a skilled workforce that is able to advocate for PA across a range of sectors and contexts.

To increase advocacy efforts and generate greater support for PA promotion at all levels, there is a need to understand the current challenges in advocating for PA and the support requirements of those working to promote PA. While some challenges to advocacy are already known (including limited personnel and financial resources, and engagement from LIC and middle-income countries [MIC]),[19] previous work has not looked at the regional, geographic, and cultural barriers that exist in different parts of the world and how these influence the advocacy challenges faced and the type(s) of support required. Thus, the purpose of this study was to assess the challenges experienced and support needed to advocate for implementation of the GAPPA in LIC, LMIC, UMIC, and HIC. Identification of gaps in current capacity and the supports required to upskill relevant stakeholders will help inform system supports and strategies for implementation of the GAPPA at scale.

Methods

Study Design

This cross-sectional study aimed to understand the challenges and support requirements in advocating for implementation of the GAPPA by those involved in the promotion of PA, across LIC, LMIC, UMIC, and HIC. An online survey was used to collect responses from those working in practice, policy, and academia/research across multiple sectors, including health, transport, education, sport, and city planning. Ethics approval was sought and received from the Human Research Ethics Committee at the University of Newcastle, Australia, (number H-2020-0209), with participants completing a consent form at the beginning of the online survey.

Survey Information

The online survey (see Supplementary Material S1 [available online]) was designed and administered through Qualtrics (Qualtrics) and consisted of open and closed questions asking (1) participant demographics; (2) current awareness of, individual engagement and perceived country engagement with the GAPPA; (3) perceived factors (ie, awareness, importance, skills, time, and resources) related to advocating for implementation of the GAPPA; and (4) perceived challenges and supports needed to advocate for the GAPPA. Closed questions collected responses using 5-point Likert scales to assess participants' agreement with specific statements regarding factors in advocating for implementation of the GAPPA (ie, awareness, importance, skills, time, and resources). Statements asked were based on aspects seen as important to support effective advocacy.[15] Open-response questions asked participants to report up to 3 challenges they experience and 3 supports needed to upskill and increase capacity in advocating for implementation of the GAPPA. The survey was conducted in English, with all coauthors (representing several geographical regions) pilot testing and approving the survey before administration.

Participant Recruitment

Purposive sampling was used to recruit participants working in a range of countries and sectors. Recruitment was done through 3 different approaches:

(1) Sending global organizations seen to be directly involved with PA promotion, identified by the project team, an invitation asking them to share the survey with their members (ie, Global Observatory for Physical Activity, ISPAH, International Society of Behavioural Nutrition and Physical Activity). For Global Observatory for Physical Activity, the survey was shared with country card contacts, which represent 173 countries.

(2) Sending individuals known by the project team to be involved with PA promotion an invitation asking them to complete and share the survey.

(3) Advertising the survey through the ISPAH virtual congress 2020, ISPAH website, ISPAH Twitter, and ISPAH LinkedIn accounts.

The survey was launched in October 2020 and available for 6 weeks. In week 4 of the survey being open, responses were reviewed by 2 authors (Murphy and Mclaughlin) to assess representation across LIC, LMIC, UMIC, and HIC and key PA-related sectors. For the final 2 weeks of the survey, promoted advertisement

was used through Twitter and LinkedIn, targeting those from underrepresented countries (ie, low income) and sectors (ie, transport and city planning).

Data Analysis

To analyze the closed and open responses collected through the survey, a combination of quantitative and qualitative approaches was used. The World Bank country classification[20] and participants reported country of residence were used to categorize responses into LIC, LMIC, UMIC, and HIC. SPSS (version 26) was used to calculate descriptive statistics to understand participant characteristics and current knowledge of and engagement with the GAPPA. A chi-square test was conducted to assess the difference in knowledge of, engagement with, and perceived factors related to advocacy of the GAPPA between respondents from different country income levels (ie, awareness, importance, skills, time, and resources). To assess specific differences between income level, the adjusted residual was observed. When the adjusted residual rises above 2.0, it is presumed that a significantly higher proportion of participants responded to the option than what was expected. When the adjusted residual falls below 2.0, it is presumed that a significantly lower proportion of participants responded to the option than what was expected.[21]

Thematic analysis was used to examine the open responses regarding the challenges and supports needed for advocating for implementation of the GAPPA. This analysis method was chosen as it is flexible, can generate unexpected insights, and allows for similarities and differences to be highlighted across the data.[22] Responses were analyzed separately for LIC, LMIC, UMIC, and HIC, enabling the analysis approach to identify challenges and supports specific to country income level. An inductive approach was chosen as the researchers did not want to fit responses to a preexisting framework but rather allow the themes to be formed from the data. The qualitative analysis plan was guided by Braun and Clarke's 6 phases of thematic analysis.[22] All responses were compiled in Excel and 3 authors (Murphy, Mclaughlin, and McLoughlin) familiarized themselves with the data. After assessing the data, initial codes were generated using the responses from LIC (Murphy), LMIC (McLoughlin), UMIC (McLoughlin), and HIC (Mclaughlin). These were dual coded with each set of codes reviewed by a second reviewer to ensure clarity and consistency in the codes. Once identified, Murphy, Mclaughlin, and McLoughlin collated similar codes into potential themes relating to the challenges and supports needed in each of the country income categories. Murphy revised all themes to ensure clarity and generated a description for the final list. All coauthors were sent the final themes and asked to provide feedback regarding their clarity and content. This feedback was used by Murphy to refine each theme, generating a clear name and description for each. Review of the themes identified by different researchers helped attenuate individual biases from the analysis and added credibility to the findings.

Results

In total, 518 participants from 81 countries (see Supplementary Material S2 [available online]) completed the survey (67.9% who accessed the survey provided responses). Table 1 shows the number of respondents across country income levels, WHO regions, job sectors, job roles, and years of experience working in PA or a related field.

Table 1 Participant Characteristics

Descriptive characteristic	N (%)
Country income level	
High	355 (69.5)
Upper middle	70 (13.5)
Lower middle	71 (13.7)
Low	22 (4.3)
WHO regions	
African	50 (9.7)
Americas	109 (21.0)
Eastern Mediterranean	14 (2.7)
European	181 (34.9)
South-East Asian	16 (3.1)
Western Pacific	148 (28.6)
Job sector	
Health	227 (43.8)
Education	164 (31.7)
Sport	63 (12.2)
Transport	12 (2.3)
City planning	10 (1.9)
Other	42 (8.1)
Job role	
Academia/research	298 (57.5)
Practice	136 (26.3)
Policy	32 (6.2)
Other	52 (10.0)
Years worked in PA field	
0–10	231 (44.6)
11–20	163 (31.5)
21–30	69 (13.3)
Over 30	55 (10.6)

Abbreviations: PA, physical activity; WHO, World Health Organization.

Quantitative Analysis

Table 2 presents the level of awareness and perceived engagement with advocating for the GAPPA reported by participants from LIC, LMIC, UMIC, and HIC. There were significant differences observed for the level of awareness, $\chi^2(15) = 33.39$, $P < .01$, and perceived country engagement, $\chi^2(15) = 45.34$, $P < .01$, with the GAPPA across the country income levels. A higher proportion of participants (32.4%) from LMIC were "not at all aware" of the GAPPA. Despite being statistically insignificant, a higher proportion (40.9%) of those from a LIC reported being "very aware" of the GAPPA when compared with the other country income levels (21.1%–30.0%). A higher proportion of participants from LMIC (25.4%) and UMIC (25.7%) countries believed that their country was "not at all engaged" in advocating for the GAPPA. In addition, a higher proportion (36.9%) of participants from HIC believed that their country was "moderately engaged" in advocating for the GAPPA. There were no significant differences in reported personal engagement across all country income levels, $\chi^2(15) = 9.73$, $P = .84$.

The Supplementary Material S3 (available online) presents the factors related to advocating for implementation of the GAPPA by country income level. All percentages in the following section show those reporting "agree" or "strongly agree." Most participants

Table 2 Level of Awareness and Perceived Engagement With Advocating for the GAPPA Reported Across Different Country Income Levels

	Country income level				
	Low	Lower middle	Upper middle	High	χ^2
Level of awareness, %					
Not at all aware	13.6	32.4[a]	12.9	12.1[b]	33.39 (15)**
Slightly aware	22.7	18.3	11.4	18.3	
Moderately aware	4.5	19.7	30.0	25.9	
Very aware	40.9	21.1	30.0	25.4	
Extremely aware	13.6	8.5	11.4	16.9	
Don't know	4.5	0.0	4.3	1.4	
Personal engagement, %					
Not at all engaged	22.7	25.4	20.0	25.6	9.73 (15)
Slightly engaged	13.6	22.5	18.6	23.4	
Moderately engaged	22.7	21.1	22.9	20.0	
Very engaged	27.3	23.9	28.6	23.7	
Extremely engaged	13.6	7.0	5.7	4.8	
Don't know	0.0	0.0	4.3	2.5	
Country engagement, %					
Not at all engaged	0.0	25.4[a]	25.7[a]	7.3[b]	45.34 (15)**
Slightly engaged	40.9	38.0	34.3	31.3	
Moderately engaged	36.4	19.7[b]	24.3	36.9[a]	
Very engaged	9.1	12.7	8.6	15.8	
Extremely engaged	4.5	0.0	1.4	1.7	
Don't know	9.1	4.2	5.7	7.0	

Note: χ^2, chi-square score.
[a]Significantly more. [b]Significantly less.
**$P < .01$.

felt that they know why the GAPPA is important (80.4%–87.3%), want to advocate for the GAPPA (81.8%–94.8%), need to advocate for the GAPPA (76.3%–94.7%), and it would be a good thing to advocate for the GAPPA (87.3%–98.1%). However, participants' feelings were more varied when asked if they know how to advocate for the GAPPA (45.1%–68.4%), have the necessary time (41.5%–84.2%) and materials (26.4%–35.2%) to advocate for the GAPPA, and have people around them who advocate for (36.9%–43.6%) and provide support to advocate for the GAPPA (26.4%–43.7%).

When assessing differences in the factors related to advocating for the GAPPA among respondents from different country income categories, the analysis revealed a significant difference for perceived time available to advocate, $\chi^2(12) = 44.58$, $P < .01$. A higher proportion of those from a HIC (20.5%) disagreed with the statement "I have enough time to advocate the GAPPA," while a higher proportion of those from a LIC (36.8%) and LMIC (18.5%) countries agreed, $\chi^2(12) = 44.58$, $P < .01$. No other significant differences were found between country income levels for the other factors assessed.

Qualitative Analysis

Participants (n = 318; 61% of total respondents) from LIC (n = 22; 6.9%), LMIC (n = 47; 14.8%), UMIC (n = 45; 14.2%), and HIC (n = 204; 64.1%) provided at least one open response. Responses were excluded from the qualitative analysis when they were not relevant to the research question or were unclear to the researchers. The qualitative analysis revealed 11 themes under the domains of challenges experienced (n = 7) and supports required (n = 4) for advocating for implementation of the GAPPA. Tables 3 and 4 provide details for each challenge and support reported and how they are experienced across country income levels. Supplementary Material S4 (available online) provides a graphic showing the themes identified through the qualitative analysis.

Participants noted challenges relating to resources, support and engagement, awareness, priorities, education and training, local application, and accessibility of information. Participants suggested support requirements related to guidance, education and training, resources, and cooperation and alliance. Each challenge and support required are described in the following sections, where the following abbreviations are used to note what country income level the respondent linked to each quote came from: LIC; LMIC, UMIC, and HIC. Themes are presented based on the number of times they were mentioned by respondents. This can help to prioritize challenges with and supports required to advocate for implementation of the GAPPA; however, country context needs to be considered.

Challenges Experienced

Support and Engagement. Participants from all country income levels noted a lack of support or engagement from governmental bodies and/or organizations who were seen as important for implementing the GAPPA, with some noting that "Concerned government officials do not care about it [GAPPA]" (LIC). Others

Table 3 Challenges With Advocating for the GAPPA by Country Income Level

Theme	Subthemes (statements relate to a lack of each aspect, except competing priorities)	Country income level			
		Low	Lower middle	Upper middle	High
Support and engagement	Governmental/organizational support and engagement for advocacy work	•	•	•	•
	Intersectoral responsibility to advocate for the GAPPA		•	•	•
	Leadership/governance to advocate for the GAPPA			•	•
	Public interest or support for PA promotion		•	•	
	Access to decision makers to advocate for the GAPPA				•
	Support for PA and PA policy advocacy research		•		
Priorities	Competing priorities for implementing the GAPPA	•	•	•	•
Advocacy resources	Funding for advocacy work	•	•	•	•
	Materials and platforms to aid advocacy		•	•	•
	Time to advocate			•	•
Awareness	Awareness of the GAPPA in the wider agencies and communities	•	•	•	•
	Personal awareness of how to promote PA	•	•	•	•
Advocacy education and training	Advocacy skills and training	•		•	•
Local application	Translating the GAPPA to local contexts			•	•
Accessibility	Accessibility of information about the GAPPA	•	•		

Abbreviations: GAPPA, Global Action Plan on Physical Activity; PA, physical activity; •, challenge was mentioned in this country income level. Note: Themes are presented in order of times they were mentioned.

reported challenges with the time it takes to engage with decision makers.

> It takes much work to convince government officials that these topics are more, or as important, as others. (UMIC)

Those from the HIC and MIC noted a lack of intersectoral thinking and action between those who play an important role in advocating for and implementing the GAPPA. A participant from a HIC highlighted that this is sometimes because "government departments are not set up to support systems wide solutions to PA issues." Additionally, this lack of intersectoral collaboration seems to stem from a lack of networks to drive or lead this advocacy work.

> We still need to advocate and explain why advocating for GAPPA needs to be done through transdisciplinary networks. (UMIC)

Those in HIC mentioned other challenges such as a lack of access to decision makers to build awareness, while those in MIC highlighted the lack of public interest or support for the promotion of PA as a challenge to advocacy for the GAPPA. This was due to factors such as no perceived change needed, cultural resistance, or a lack of advocates across sectors. Finally, those from LMIC described a specific "lack of support for PA and policy advocacy research."

Priorities. Participants from all country income levels mentioned competing priorities as a challenge with advocating for the GAPPA. Competing priorities were highlighted at different levels (eg, policy and public) and in different sectors (eg, education and transport), with topics such as food security for all, tobacco control, nutrition, and more recently COVID-19, all competing for limited resources.

> The priorities for different players may differ. This may lead to waiting longer and along the way enthusiasm is lost. (LIC)

Furthermore, those from an UMIC noted that priorities for health were focused on treatment instead of prevention.

Resources. Funding to support implementation of the GAPPA was seen as a challenge across all country income levels. Those in UMIC highlighted a lack of funding to support research that can help advocate for implementation of the GAPPA.

> Currently, science funding is being cut from research and academic institutions in [name of country]; this is going to have huge implications in the much-needed capacity building for our country as well as for the generation of evidence to advocate for GAPPA. (UMIC)

Those from HIC or MIC also mentioned a lack of education/awareness raising materials, platforms, and good practice examples to support training and education around advocacy for the GAPPA. One participant from a HIC stated that this leads to a "lack of guidance on how to actually do it [advocate] . . . what are some concrete steps for putting it in place." Finally, those in HIC mentioned a perceived lack of time to advocate for the GAPPA as a challenge, reflecting the quantitative finding.

Awareness. Participants from all country income levels perceived a lack of awareness for both PA and the GAPPA as a challenge for its advocacy. Participants felt that awareness of the GAPPA was lacking across wider agencies and communities not directly involved in PA but that have an important role in its promotion.

> I hear very few people outside of academic circles mention GAPPA. (HIC)

Advocacy Education and Training. Limited advocacy skills and training was highlighted by those from the HIC, UMIC, and LIC. Participants reported a perceived lack of knowledge regarding

Table 4 Supports Required for Advocating for Implementation for the GAPPA by Country Income Level

Theme	Subthemes	Country income level			
		Low	Lower middle	Upper middle	High
Advocacy resources	Materials and platforms to increase awareness and gain support of stakeholders	•	•	•	•
	Funding support for advocating and implementing the GAPPA	•	•	•	
	Funding support for infrastructure to support PA	•			
Advocacy education and training	Training to increase knowledge and skills for advocating for GAPPA or PA	•	•	•	•
	Training opportunities for professionals regarding implementation of the GAPPA			•	•
	Training opportunities in research methods to monitor advocacy efforts		•		
Guidance and support	Guidance for local governments/policymakers from international organizations			•	•
	Governmental support for advocating for implementation of the GAPPA		•	•	
	Support for "real world" research				•
	Endorsement of advocacy activities from the WHO		•		
	Creation of a specific role to support the GAPPA within countries		•		
	PA policy development and sharing between countries	•			
Cooperation and alliance	Interconnecting sectors for increased collaboration within countries	•	•	•	•
	GAPPA alliance group to enable communication and sharing across countries				•
	Regional societies and conferences to share knowledge and good practice			•	

Abbreviations: GAPPA, Global Action Plan on Physical Activity; PA, physical activity; •, support was mentioned in this country income level. Note: Themes are presented in order of times they were mentioned.

"who, what, or how" (HIC) to effectively advocate for the GAPPA, with this being further emphasized as a challenge in some LIC.

> Poor advocacy skills or complete lack of how to do advocacy in an environment that is poverty stricken and corruption polluted. (LIC)

Local Application. The ability to translate the GAPPA into meaningful actions for a local context was seen as challenging by those in HIC and UMIC. Furthermore, participants highlighted the need for future strategies to be adaptable for use across regions where context may differ.

> Inequity and diversity—[country name] is a big diverse country. It requires the adaptation of PA promotion strategies to different contexts. (UMIC)

Accessibility. Participants from the LMIC and LIC viewed a lack of accessibility to the GAPPA documents as a challenge for its advocacy. Some participants noted a lack of knowledge regarding "how to get in touch with the WHO" (LMIC) in their country or region, while others in LIC reported having "no information about the GAPPA." One respondent from a LMIC noted "language" as a challenge when accessing the GAPPA.

Supports Needed

Advocacy Resources. Responses from all country income levels referred to a need for resources to aid awareness raising and gain buy-in at a national level. These resources included materials such as slide decks, policy briefs, national data dashboards, good practice examples, and marketing materials. Participants noted that such materials need to be accessible and provide a clear message regarding the key information, evidence, and benefits of advocating for the GAPPA. Those from MIC specifically stated that these materials need to be adaptable (ie, multilingual) and provide "ready-made" information that can be disseminated at different levels.

> Ready-made Information, education, and communication materials for dissemination on social media platforms. (LMIC)

> Promotion material that can be translated to the native languages. Possible financial support to do the translations. (UMIC)

> Concrete examples of processes that have worked in other countries, and examples of where advocating for and implementing GAPPA policy actions have achieved success. (HIC)

Those from MIC or LIC highlighted a need for governments or organizations to allocate or provide funding support to aid advocacy and implementation of the GAPPA. Additionally, responses from LIC noted a need for funding to support (1) research activities around PA promotion (eg, projects, conference attendance) and (2) physical infrastructure to support the promotion of PA.

> Financial support to involve and train people to advocate GAPPA. (LIC)

Advocacy Education and Training. Participants across all country income levels highlighted that advocacy training was needed for all those involved in PA promotion (both directly and indirectly). A need for training opportunities to provide guidance regarding advocacy and implementation of the GAPPA was noted, with examples such as online resources and face-to-face training days. More specifically, participants felt the purpose of these opportunities should be to help stakeholders understand who to engage, how to engage them, and what information is useful for helping to lobby for the GAPPA and gain political or organizational support across sectors.

> Training on how to advocate, reach out to public and controlling bodies. (LMIC)

> We do need more information on how to contribute to multi-sectoral strategies, which involve the different systems—health, education, sport, transportation and urban planning, as well as how the academic world can interact with the private sector. We must be provided information (and opportunities for action) not only to put more evidence into policy, but also to put more policy into evidence. (HIC)

Furthermore, those from HIC highlighted a need for additional training opportunities for those who are not directly involved in PA promotion. Such training opportunities could aim to raise awareness around the benefits of PA and share current good practice in other countries. Participants mentioned the importance of this awareness raising within government, medical practices, public health institutes, and school systems.

> Curriculum development for PA policy training/courses through medical, nursing, public health institutions, etc. would be most helpful in getting PA policy issues on the radar for such professions. (HIC)

Finally, those from LMIC referred to the need for training in research methods. Such training includes how to use objective measurement tools and manage data in order to assess progress of advocacy activities and their impact on PA levels.

Guidance and Support. Responses highlighted the need for international, national, and local guidance and support. Those from HIC and MIC suggested this should come from international organizations, such as the WHO and ISPAH. Participants mentioned a specific need for these organizations to provide guidance regarding how to (1) support multi-sectoral advocacy on a national level, (2) show government departments how they can contribute and utilize a systems approach, and (3) how to evaluate progress (ie, what information should be collected to assess progress). Additionally, those from LMIC stated a need for increased endorsement from international organizations of good practices, such as projects and events, in different countries.

> More information about which people and organizations should be contacted locally to get information about advocating the GAPPA. There is no information about it in the WHO or ISPAH website. In [country name] the [society name] could be a potential centre of information to gather advocates and help them how to advocate the GAPPA. (UMIC)

> Develop process indicators for countries to assess the GAPPA progress on each country. (HIC)

At a local level, participants from all country income levels highlighted a need for additional support and guidance from their national or local governments. The type of guidance or support needed differed based on country income level. Those from HIC expressed a need for additional support regarding "real world" research that encourages collaboration, while those from the MIC noted a need for increased buy-in from national governments to support the promotion of PA. This included an increase in accessibility to government personnel to "meet with political leaders to lobby for political will" (UMIC) regarding advocacy and implementation of the GAPPA, which could be done in collaboration with the WHO.

Participants from UMIC and LIC expressed a specific need to develop country specific policies related to the promotion of PA, which can place PA on the political agenda and create a platform to advocate for the GAPPA.

At a local level, participants from LMIC stated that identifying or putting in place a "more accessible local representative" to lead advocacy for the GAPPA and help bridge a perceived gap between the WHO and national contexts. Participants highlighted that this could be aided through policy and framework developments that work towards the GAPPA strategic objectives but also align with the Sustainable Development Goals.[3]

Cooperation and Alliance. Participants from all country income levels highlighted a need to promote increased collaboration between stakeholders across sectors, especially those that may not have a primary focus on the health benefits of PA (eg, transport, education, sport). Collaboration needs to be promoted at a local, national, regional, and international level. Those in UMIC noted how creation or identification of a position/person or organization to lead advocacy for the GAPPA, and the provision of regional events, could allow greater learning and sharing of knowledge.

> Creating better connections with non-academic partners, e.g., city planners. (HIC)

Specific responses from participants in LIC highlighted a need to encourage collaboration between international agencies and academic institutions in LIC to support advocacy activities.

> Encourage agencies like UNICEF to partner with academic institutions to support PA advocacy activities. I believe the activities here will be better monitored with less or no corruption. (LIC)

Those from HIC and LMIC referred to the establishment of an international alliance or working group to enable cooperation and sharing of knowledge and good practice between countries, helping to establish a focal point for the GAPPA.

> Creation of a Knowledge Network and Advocacy Working Group . . . to undertake research projects aimed at bringing together the necessary evidence base for advocacy. If advocacy is too much linked to one or a few individuals, chances are that the activity will cease to exist once that person leaves the area or organization. (LMIC)

Discussion

This study assessed the challenges experienced and supports needed to advocate for implementation of the GAPPA in LIC, LMIC, UMIC, and HIC. The quantitative analysis revealed that, overall, participants think the GAPPA is important, that it would be good to advocate, and that they feel a need and want to advocate for its implementation. However, the data show that high proportions of participants feel that they themselves and their country are not engaged with advocating for implementation of the GAPPA, showing potential challenges for localized implementation. Further exploration of the quantitative results shows that across all country income levels a high proportion of participants feel they do not (1) know how, (2) have the time available, and (3) have the necessary materials or supports to effectively advocate for implementation of the GAPPA. This highlights the need for advocacy tools, resources, and training opportunities to aid key stakeholders with who, what, and how to advocate for the GAPPA and achieve the best outcomes.

Previous literature notes the need to shift stakeholders' opinion and mobilize support and resources for PA promotion.[15] Since the inception of this study, there have been commendable efforts to develop and utilize advocacy tools and platforms through international organizations such as the WHO (eg, WHO advocacy brief,[23] ACTIVE technical package[24] including the promoting PA through schools and health care toolkits,[25,26] reINVENT & reBUILD webinar series,[27] and ISPAH [8 Investments Community Hub & Social Media Toolkit[28]]). A previous commentary also highlights how early career professionals can contribute to advocacy for implementation of the GAPPA through research, practice, business, policy, and professional and public opinion.[29] While these new resources have contributed to addressing some of the supports and challenges identified in our findings, there remains a number of gaps. The qualitative analysis provides an understanding of what perceived gaps remain and what supports are needed to aid future advocacy efforts and their effectiveness.

An important observation from the qualitative analysis is that those from different country income levels experience similar advocacy challenges and required supports. However, when exploring this further, how countries from different income levels experience these can be distinct, which may relate to regional or cultural barriers and opportunities. For example, support and engagement challenges in HIC related to a lack of access to decision makers to advocate for the GAPPA, while in MIC a key challenge is a lack of public support for the promotion of PA. These differences demonstrate a need to plan and implement advocacy strategies with consideration of regional, geographic, and cultural barriers and opportunities, to ensure they are both effective and equitable. Table 5 provides an overview of common challenges reported and suggested actions to overcome them identified through the analysis. This can inform the next steps when prioritizing the supports required to overcome common challenges related to advocacy for implementation of the GAPPA.

Effective advocacy can be supported and enabled through 5 features or steps, which can be used to help understand our key findings.[30] The first step relates to the translation and presentation of evidence as urgent. Participants did not mention the level of evidence being a challenge but did highlight competing priorities on the political agenda, such as tobacco control and more recently COVID-19. This demonstrates the importance of equipping the PA workforce with the necessary skills and tools to present evidence in a convincing way to national and local governments. Generating buy-in from key stakeholders can help to create the required supports,[19] including governmental buy-in and leadership, which aid other steps for effective advocacy.[30] One such support may be the provision of government funding for advocacy activities that raise awareness and aid effective implementation of the GAPPA. However, lessons from tobacco control show that sustained advocacy efforts with clear goals are required to garner sustainable funding.[31] It is also important to note that addressing the physical inactivity problem at a political level relies on more than government funding.[32] As mentioned by participants, it can also involve other forms of support, such as having a national PA action plan, which 45% of countries globally do not currently have.[33]

The second step relates to ensuring that the evidence is presented for different policy contexts across sectors. Participants did not mention any challenge regarding how the GAPPA fits into specific policy contexts, however, challenges regarding governmental engagement, siloed departments, and intersectoral responsibility to advocate for implementation of the GAPPA were noted. Participants from all country income levels stated a need to interconnect sectors, allowing increased collaboration when advocating for implementation of the GAPPA. This aligns with previous research, which highlights a need for involvement from multiple political domains and agencies when generating and implementing solutions for physical inactivity.[32,34,35] Demonstrated here is the need to distill the evidence on the co-benefits of PA (eg, its contribution to the Sustainable Development Goals[3,4]) and

Table 5 Common Challenges and Suggested Actions Related to Advocacy for Implementation of the GAPPA

Challenge	Suggested Action
Lack of support or engagement from governmental bodies and/or organizations who are seen as important for implementing the GAPPA.	Provision of advocacy resources from "leading" and "recognised" organisations to help raise awareness and gain support from governmental bodies and organizations. Resources need to be adaptable for use in different contexts and with different audiences.
Lack of intersectoral working to advocate for implementation of the GAPPA.	Identification of a lead organization to promote and facilitate collaborative working at a local, national, regional, and international level. Where possible, existing networks should be used to facilitate collaboration at national (eg, I-PARC), regional (eg, ASPA), and international (eg, WHO, ISPAH) levels.
Lack of funding to support advocacy for implementation of the GAPPA. This is also linked to competing priorities such as food security for all, tobacco control, and more recently COVID-19, all competing for limited resources.	Provision of resources (eg, policy briefs and infographics) and training to help present evidence on the co-benefits of physical activity and the importance of implementing the GAPPA to multiple sectors. For example, highlighting how increasing physical activity levels can contribute to meeting the Sustainable Development Goals.
Lack of awareness of the GAPPA in wider agencies and communities.	Targeted campaigns and training opportunities to increase awareness of the GAPPA in organizations that are not directly involved in physical activity promotion but are important for implementation of the GAPPA.
Lack of advocacy skills and training.	Provision of training opportunities to increase knowledge of what to advocate, how to advocate, and who to advocate to. Such training needs to increase capacity of "advocates" to select appropriate actions for their context.

Abbreviations: ASPA, Asia-Pacific Society for Physical Activity; GAPPA, Global Action Plan on Physical Activity; I-PARC, Irish Physical Activity Research Collaboration; ISPAH, International Society for Physical Activity and Health; WHO, World Health Organization.

continue advocating for the GAPPA to be implemented across multiple sectors (eg, health, transport, education, and sport).

Third is generating an agenda for action, highlighting what needs to change to achieve a solution for the issue. The GAPPA[11] provides a call to action; however, effective advocacy is required to aid its implementation. Participants from HIC and UMIC reported challenges with translating the policy actions within the GAPPA to their local context, with those from LMIC and LIC noting challenges with accessing information regarding the GAPPA. This highlights the need for the both the PA actions themselves and the advocacy strategies being endorsed to be adaptable for use in different contexts. Consideration is also needed to make sure the information within the GAPPA is accessible for those in all countries. An example of increasing accessibility, mentioned by participants, is the translation of GAPPA actions and resources into additional languages.

The final 2 steps involve the mobilization of advocacy strategies as appropriate and the translation of evidence and information into persuasive communications. This can be aided through forging of alliances and partnerships for action, helping deliver effective advocacy to bridge the gap between evidence and practice in favor of the GAPPA and its implementation. Importantly, this needs to occur with and through the political, media, professional, organizational, and community domains.[15] The analysis revealed several perceived supports that are needed, which are consistent with the factors identified in systems literature that describe implementation successes, such as a need to strengthen political commitment and leadership and to support and enable the workforce.[36] Like previous research,[19] building capacity through the provision of advocacy education and training opportunities was seen as necessary. This requires building competencies in developing advocacy strategies to enable implementation of the GAPPA but also advancing competencies in relevant stakeholders, both nationally and locally, to select and implement appropriate strategies to meet local needs. Such advocacy education and training needs to be supported through professional development and the provision of advocacy tools and resources. Advocacy activities can also be further enhanced through platforms that support dissemination of tools and resources, but also through the sharing and recognition of good practice. Participants mentioned the need for resources, such as policy briefs and infographics, to raise awareness and "sell" the importance of the GAPPA to stakeholders at multiple levels. There is a need to assess how best we can disseminate current and future advocacy tools and platforms to all countries, especially those where awareness of the GAPPA and engagement with its implementation is low.

The current study used an online survey and recruitment methods to engage stakeholders involved in PA promotion across the globe. Gaining responses from different country income levels allowed for comparison of the challenges experienced and supports required to advocate for implementation of the GAPPA. Furthermore, use of both quantitative and qualitative methods allowed for a deeper understanding of how each country income level experiences the various challenges and supports reported. These could be seen as strengths of the current study. However, several limitations also need to be noted. First, a lower proportion of responses came from participants in LIC and MIC, and specific WHO regions. Previous research assessing PA and sedentary behavior policies internationally also reported a limitation with lower representation from LIC and MIC, and African and South-East Asian regions.[37] Klepac Pogrmilovic et al[37] state that a lack of internationally visible PA and public health experts in some countries may have led to this. The overrepresentation of responses from HIC and specific WHO regions may have biased the results and needs to be taken into consideration when interpreting the findings. It is important to consider the approaches used to engage those from countries of different income levels, whereby representation may be improved with administration of the survey in several languages. Unfortunately, due to this work being unfunded, translation of survey questions and responses was not feasible. Second, convenience sampling was used to recruit participants for the survey, which may have biased the findings. Third, the use of open responses in the survey allowed for the collection of qualitative data, although this approach did not allow for the prompting of further information. Interviews or focus groups would have enabled prompting of participants; however, the use of an online survey allowed for a wider range of responses to be collected. Finally, the use of qualitative analysis means that the findings represent participants' perceptions towards the topic, but also how the authors understood the data. Multiple coders were used in the analysis and writing to avoid assumptions being made by the lead author and to increase rigor in the methods, while reflexivity was used by the lead author to recognize how their values and views may influence the findings, allowing a truer representation of the data.[38,39]

Conclusions

The findings of this study provide valuable insight into the challenges experienced and support needed to advocate for implementation of the GAPPA in LIC, LMIC, UMIC, and HIC. They can be used in conjunction with advocacy models and system-change literature to focus on what needs to change to better advance implementation of the GAPPA. This includes mobilizing support from decision makers, professionals and community members, building workforce capacity, creating supportive environments, strengthening institutions and leadership, and identifying sustainable funding to advocate for implementation of the GAPPA in local contexts. Of key importance is that advocacy strategies are implemented with due consideration of regional, geographic, and cultural barriers and opportunities, to ensure strategies are effective and equitable.

Acknowledgments

The authors acknowledge the support of the International Society for Physical Activity and Health. The authors wish to thank members of the Global Observatory for Physical Activity and the International Society of Behavioural Nutrition and Physical Activity who helped with the recruitment of participants. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

References

1. Lee IM, Shiroma EJ, Lobelo F, et al. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet*. 2012;380(9838):219–229. doi:10.1016/S0140-6736(12)61031-9
2. Strain T, Brage S, Sharp SJ, et al. Use of the prevented fraction for the population to determine deaths averted by existing prevalence of physical activity: a descriptive study. *Lancet Glob Health*. 2020;8(7): e920–e930. doi:10.1016/S2214-109X(20)30211-4
3. Department of Economic and Social Affairs. *United Nations: Transforming Our World: The 2030 Agenda for Sustainable Development*. United Nations; 2015.

4. Salvo D, Garcia L, Reis RS, et al. Physical activity promotion and the United Nations sustainable development goals: building synergies to maximize impact. *J Phys Act Health*. 2021;18(10):1163–1180. doi:10.1123/jpah.2021-0413
5. Bull FC, Al-Ansari SS, Biddle S, et al. World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *Br J Sports Med*. 2020;54(24):1451–1462. doi:10.1136/bjsports-2020-102955
6. Hafner M, Yerushalmi E, Phillips WD, et al. *The Economic Benefits of a More Physically Active Population: An International Analysis*. RAND Corporation; 2019.
7. Guthold R, Stevens GA, Riley LM, Bull FC. Global trends in insufficient physical activity among adolescents: a pooled analysis of 298 population-based surveys with 1 6 million participants. *Lancet Child Adolesc Health*. 2020;4(1):23–35. doi:10.1016/S2352-4642(19)30323-2
8. Guthold R, Stevens GA, Riley LM, Bull FC. Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1·9 million participants. *Lancet Glob Health*. 2018;6(10):e1077–e1086. doi:10.1016/S2214-109X(18)30357-7
9. McLaughlin M, Atkin AJ, Starr L, et al. Worldwide surveillance of self-reported sitting time: a scoping review. *Int J Behav Nutr Phys Act*. 2020;17(1):111. doi:10.1186/s12966-020-01008-4
10. Strain T, Wijndaele K, Garcia L, et al. Levels of domain-specific physical activity at work, in the household, for travel and for leisure among 327 789 adults from 104 countries. *Br J Sports Med*. 2020;54(24):1488–1497. doi:10.1136/bjsports-2020-102601
11. World Health Organization. *Global Action Plan on Physical Activity 2018–2030: More Active People for a Healthier World*. World Health Organization; 2019.
12. World Health Organization. *Report of the Inter-agency Meeting on Advocacy Strategies for Health and Development: Development Communication in Action*. World Health Organization; 1995.
13. Shilton T. Creating and making the case: global advocacy for physical activity. *J Phys Act Health*. 2008;5(6):765–776. doi:10.1123/jpah.5.6.765
14. Shilton TR. Advocacy for noncommunicable disease prevention—building capacity in Japan. *Jpn J Health Educ Promot*. 2016;24:102–109.
15. Shilton T. Advocacy for physical activity-from evidence to influence. *Promot Educ*. 2006;13(2):118–126. doi:10.1177/10253823060130020106
16. Milton K, Cavill N, Chalkley A, et al. Eight investments that work for physical activity. *J Phys Act Health*. 2021;18(6):625–630. doi:10.1123/jpah.2021-0112
17. Shilton T, Robertson G. Beating non-communicable diseases equitably–let's get serious. *Glob Health Promot*. 2018;25(3):3–5. doi:10.1177/1757975918797833
18. International Union for Health Promotion and Education. *Beating NCDs Equitably: Ten System Requirements for Health Promotion and the Primary Prevention of NCDs*. IUHPE; 2017.
19. Blanchard C, Shilton T, Bull F. Global Advocacy for Physical Activity (GAPA): global leadership towards a raised profile. *Glob Health Promot*. 2013;20(suppl 4):113–121. doi:10.1177/1757975913500681
20. World Bank. World Bank country and lending groups. 2020. https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-worldbank-country-and-lending-groups. Accessed March 18, 2020.
21. Agresti A. *Categorical Data Analysis*. John Wiley & Sons; 2003.
22. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77–101. doi:10.1191/1478088706qp063oa
23. World Health Organization. *Fair Play: Building a Strong Physical Activity System for More Active People*. World Health Organization; 2021.
24. World Health Organization. *ACTIVE: A Technical Package for Increasing Physical Activity*. World Health Organization; 2018.
25. World Health Organization. *Promoting Physical Activity Through Schools: A Toolkit*. World Health Organization; 2021.
26. World Health Organization. *Promoting Physical Activity Through Primary Health Care: A Toolkit*. World Health Organization; 2021.
27. World Health Organization. *ReINVENT & ReBUILD: Working Together for a Stronger, Fairer and More Inclusive Physical Activity and Sport System for All*. World Health Organization; 2021.
28. International Society for Physical Activity and Health. 8 Investments Community Hub and Social Media Toolkit. 2021. https://www.ispah.org/resources/key-resources/8-investments/. Accessed May 10, 2022.
29. Direito A, Murphy JJ, Mclaughlin M, et al. Early career professonals' (researchers, practitioners, and policymakers) role in advocating, disseminating, and implementing the global action plan on physical activity: ISPAH early career network view. *J Phys Act Health*. 2019;16(11):940–944. doi:10.1123/jpah.2019-0450
30. Shilton T, Champagne B, Blanchard C, Ibarra L, Kasesmup V. Towards a global framework for capacity building for non-communicable disease advocacy in low-and middle-income countries. *Glob Health Promot*. 2013;20(suppl 4):6–19. doi:10.1177/1757975913501208
31. Yach D, McKee M, Lopez AD. Improving diet and physical activity: 12 lessons from controlling tobacco smoking. *BMJ*. 2005;330(7496):898–900. doi:10.1136/bmj.330.7496.898
32. Rütten A, Abu-Omar K, Gelius P, Schow D. Physical inactivity as a policy problem: applying a concept from policy analysis to a public health issue. *Health Res Policy Syst*. 2013;11:1–9. doi:10.1186/1478-4505-11-9
33. Ramirez Varela A, Hallal P, Pratt M, et al. *Global Observatory for Physical Activity: 2nd Physical Activity Almanac*. Global Observatory for Physical Activity (GoPA!); 2021.
34. Bellew W, Smith BJ, Nau T, Lee K, Reece L, Bauman A. Whole of systems approaches to physical activity policy and practice in Australia: the ASAPa project overview and initial systems MAP. *J Phys Act Health*. 2020;17(1):68–73. doi:10.1123/jpah.2019-0121
35. Murphy JJ, Mansergh F, Murphy MH, et al. "Getting Ireland Active"—application of a systems approach to increase physical activity in Ireland using the GAPPA framework. *J Phys Act Health*. 2021;18(11):1427–1436. doi:10.1123/jpah.2020-0864
36. WHO Civil Society Working Group on NCDs (CCWGNCDs). *Resilient Systems for Building Back Better: System Requirements for the Prevention and Control of Noncommunicable Diseases and COVID-19*. WHO CCWG on NCDs; 2021.
37. Klepac Pogrmilovic B, Ramirez Varela A, Pratt M, et al. National physical activity and sedentary behaviour policies in 76 countries: availability, comprehensiveness, implementation, and effectiveness. *Int J Behav Nutr Phys Act*. 2020;17(1):1–3. doi:10.1186/s12966-020-01022-6.
38. Cornish F, Gillespie A, Zittoun T. Collaborative analysis of qualitative data. In: Flick U, ed. *The Sage Handbook of Qualitative Data Analysis*. SAGE Publications; 2013:79–93.
39. Jootun D, McGhee G, Marland GR. Reflexivity: promoting rigour in qualitative research. *Nurs stand*. 2009;23:42–46. doi:10.7748/ns2009.02.23.23.42.c6800