

SUPPORTING HEALTH LITERACY OF VULNERABLE GROUPS – CHILDREN AS AN EXAMPLE

Professor of Clinical Nursing Science Sanna Salanterä Department of Nursing Science, University of Turku, Finland

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BACKGROUND

- Term "health literacy" was first used in 1974
- After 1992 the use of health literacy has increased and the importance of health literacy for public health and healthcare is growing
- The majority of research literature on health literacy has been published since 2005

(Speros 2005 ; Sørensen et al. 2012)



DEFINITIONS OF HEALTH LITERACY

- There are several different definitions and models of health literacy
- WHO defines health literacy as" the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health"
- The definition includes two levels of actions:
 - Both personal actions (by changing personal lifestyles) and actions towards community health (by changing living conditions/determinants of health) (WHO 1998)



EXAMPLES OF HEALT LITERACY MODELS



Fig. 2. Conceptual model of health literacy of the European Health Literacy Survey

Source: adapted from: Sørensen K et al. Health literacy and public health: a systematic review and integration of definitions and models. BMC Public Health, 2012, 12:80.

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CONCEPTUAL MODEL OF HEALTH LITERACY AS AN ASSET Nutbeam 2008



Fig. 2. Conceptual model of health literacy as an asset.



LEVELS OF HEALTH LITERACY

- Health literacy can be defined as a three level concept
 - Level 1: Functional health literacy (Basic skills)
 - Communication of factual information on health risks and how to use health services
 - Level 2: Interactive (or communicative) health literacy (More advanced skills)
 - Focused on the development of personal and social skills (especially motivation and self-confidence) to act on the advice received
 - Level 3: Critical health literacy (Most advanced skills)
 - Directed towards improving individual and community capacity to act (social and political actions) on the social, environmental and economic determinants of health

(Nutbeam 2000)



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HEALTH LITERACY AS AN OUTCOME AND A MEDIATOR

- Health literacy is a key outcome of health education
- Health literacy is related to health behaviors
 - Health literacy predicts health status and outcomes more strongly than age, income, employment status, education level and race or ethnicity
- Increased health literacy may lead to equity and sustainability in public health and may help to reduce health disparities
- By improving people's access to health information, their capacity to use it effectively, and by fostering participation, health literacy is also critical to empowerment

(Nutbeam 1998; 2000; Brown et al. 2007; Manganello 2008; DeWalt & Hink 2009; Higgins et al. 2009; Sørensen et al. 2012)



CERTAIN GROUPS ARE MORE VULNERABLE

- Health literacy depends on
 - Previous knowledge, values and attitudes toward health
 - **Previous experiences** (e.g. prior experience with illness, healthcare system or exposure to health-related language)
 - **Personal factors** (e.g. age, gender, background, socioeconomic status, education, occupation, employment, income, cognitive development, social skills, basic literacy and numeracy skills)
 - Societal and environmental factors (i.e. demographic situation, culture, language, political forces, societal systems)
 - **Situational factors** (e.g. social support, family and peer influences, media use and physical environment)

(Nutbeam 2000; Speros 2005; Magnanello 2008; Higgins et al. 2009; Sørensen et al. 2012)



COUNTRIES VARY GREATLY

- 1 out of 10 participants (12.4%) had inadequate health literacy
- However, this proportion varied between 1.8 and 26.9% by country

	inadequa	ate genera	al-HL 🔳	problematio	general-HL	■ suffic	ient gener	al-HL ≡	excellent ge	eneral-HL	
Austria	1	.8,2%		38,2%			33,7%			9,9%	
Bulgaria		26,9	%	35,2%			6 26,6%			11,3%	
Germany	11,0	%		35,3%	%			%		19,6%	
Greece	13,	9%		30,9%			39,6%			15,6%	
Ireland	10,3	%	29),7%	5		38,7%			21,3%	
Netherlands	1,8%	26	,9%			46,3%			25,1%		
Poland	10	0,2%		34,4%		35,9%			19,5%		
Spain	7,5%			50,8	%			32,	6%	9	,1%
TOTAL	12,4	4%		35,2%		36,0%				16,5%	6
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	10

(Sørensen et al. 2015)



GROUPS THAT NEED SPECIAL ATTENTION

- People with
 - poor health status
 - high use of health care services
 - low socio-economic status
 - lower education
 - **Older age** (Sørensen et al. 2015)
- Children and adolescents (Borzekowski 2009)



VULNERABLE GROUPS Children from low income families

"At risk of poverty or social exclusion, refers to the situation of people either at risk of poverty, or severely materially deprived or living in a household with a very low work intensity.

- The at-risk-of-poverty rate is the share of people with an equivalised disposable income below the at-risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income after social transfers. This indicator does not measure wealth or poverty, but low income in comparison to other residents in that country, which does not necessarily imply a low standard of living.
- Material deprivation refers to a state of economic strain and durables, defined as the enforced inability to pay unexpected expenses, afford a one-week annual holiday away from home, a meal involving meat, chicken or fish every second day, the adequate heating of a dwelling, durable goods like a washing machine, colour television, telephone or car, being confronted with payment arrears.
- The indicator persons living in households with low work intensity is defined as the number of persons living in a household having a work intensity below a threshold set at 0.20. The work intensity of a household is the ratio of the total number of months that all working-age household members have worked during the income reference year and the total number of months the same household members theoretically could have worked in the same period."



VULNERABLE GROUPS Children from low income families

- "The childhood poverty rate is a vital indicator of children's well-being"
- "The child poverty rate is a key indicator of a society's health and well-being"

Chaudry & Wimer 2016



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Children from low income families outcomes from poverty

Indicator	Percentage of Poor Children	Percentage of Nonpoor Children	Ratio of Poor to Nonpoor Children
Physical health conditions/outcomes (for children between 0 and 17 years and in year 2014)			
Reported to be in excellent health	48.9%	66.9%	0.7
Reported to be in fair to poor health	3.2%	0.8%	4.0
Uninsured for health care	6.2%	3.5%	1.8
Currently has asthma	11.0%	8.2%	1.3
Obesity (ages 2–19 years; 2009–2012)	21.2%	15.7%	1.4
Made 1 or more emergency room visits in past 12 months	24.4%	12.7%	1.9
Missed 11 or more school days in past 12 months because of illness or injury (ages 5–17 years)	4.8%	2.9%	1.7
Developmental conditions/outcomes			
Learning disability (ages 3–17 years)	10.1%	5.3%	1.9
Serious emotional or behavioral difficulty (ages 4–17 years; 2012)	7.8%	4.5%	1.7
Education conditions/outcomes			
Grade repetition (reported repeated a grade; ages 6–17 years)	18.0%	7.8%	2.3
Receiving special education or early intervention services (ages 0–17 years)	10.4%	6.2%	1.5
School-aged child with IEP (ages 6–17 years; 2012)	14.4%	10.6%	1.4
Attends unsafe school (reported child is never or sometimes safe at school)	15.1%	5.3%	2.8
High school dropout (percentage of 16- to 24-year-olds who were not in school or did not finish high school in 2013)	10.7%	5.7%	1.9
Food and nutrition conditions/outcomes			
Food-insecure children (report 3 or more food-insecure conditions among 18 questions)	25.0%	6.0%	4.2
Children with very low food security (report 8 or more food-insecure conditions among 18 questions)	3.5%	0.4%	8.8
Other			
Woman who had 1 or more teen, unmarried births	27,00 %	4,00 %	6.8
Woman who had 1 or more unmarried births (before age 30 years)	42,00 %	10,00 %	4.2
Man, ever arrested (before age 30 years)	21,00 %	14,00 %	1.5
Annual earnings at age 30 years	30,500\$	52,300\$	0.6



WHAT NEEDS CONSIDERATION WHEN PROMOTING HEALTH LITERACY?

- Need for re-evaluation of current health education practices (both content and methods)
 - Supporting health literacy is more than transmitting information
 - Tailoring health education based on individual capacities
 - In addition to supporting skills needed to access, understand, appraise and apply information, attention needs to be paid to the manner how the information is presented (Rudd 2013)



SPECIAL ASPECTS WITH CHILDREN AND ADOLESCENTS

- The majority of previous health literacy research in concentrated on adults (e.g. caregivers)
- Already young children can seek, comprehend, evaluate and use health information
 - The materials need to be age appropriate, culturally relevant and socially supported
- Health education designed to children should:
 - Increase their interest in health issues
 - Promote their self-efficacy in controlling their own health destinies
 - Be easy to understand

(Brown et al. 2007; Borzekowski 2009)



WHAT IS KNOWN TO WORK

- 1. Build the foundations for health literacy in early child development
- 2. Develop and support health-promoting schools approaches
- 3. Addressing the barriers to adult learning
- 4. Combined and tailored approaches work best
- 5. Participatory approaches are promising
- 6. Exploring new learning approaches for health and well-being

(Kickbusch et al. 2013)



WHAT NEEDS SPECIAL ATTENTION

- Broaden intervention development and evaluation outside of health care setting (Nutbeam 2012)
- Evaluate which interventions are best suited to developing health literacy for individual behaviours especially in vulnerable populations (*Taggart et al 2012*)
- Recognize and explore the potential of eHealth (Nutbeam 2012)
- Develop and evaluate interventions for children (Brown et al. 2007; Manganello 2008; DeWalt & Hink 2009)



WHAT NEEDS SPECIAL ATTENTION 2

- The challenge of measurement (Taggart et al 2012)
 - There is need to develop and validate better instruments for measuring health literacy (particularly interactive and critical health literacy)
- Conceptual confusion (Nutbeam 2012)
 - "Health literacy has become fashionable"
 - The concept is used without deeper understanding of the concept
 - -> Diversity of interventions



eHEALTH INTERVENTIONS AND GAMES FOR HEALTH

- eHealth is an application of information communication technologies across all range of functions involved in the practice and delivery of health care (Jacobs et al. 2014)
 - *Game* is an activity that involves different components, such as players, rules, goals, competition, opponents, and they aim to be entertaining and fun (Adams 2010, Smed & Hakonen 2003, Suits 1967)





GAMES FOR HEALTH

Currently there are games for health that are designed to

- 1) increase health-relevant knowledge
- 2) change health-related behavior
- involve health-related behavior change in game play (e.g. exergames which incorporate physical activity into the game design to advance game play)
- 4) influence health precursors (e.g. better resilience or less anxiety) through empowerment
- 5) train health professionals in delivering care. (Baranowski et al. 2015)



Health games

- Besides of entertainment purposes games can be used and developed for serious purposes as well
 - Examples of serious games are health games, educational games and behavior change games (Susi et al. 2007; Mitgutsch & Alvarado 2012)
- Games can be possible channels to reach those individuals that are difficult to reach with traditional health education methods (Read & Shortell 2011)
 - Games are played regardless of age, gender and socio-economic background (Entertainment Software Rating Board 2010)





SERIOUS GAMES

 Games are usually used for entertainment, but games can be developed and used for serious purposes as well Adams 2010; Susi et al. 2007; Djaouti et







Mobile health games

Different type of health games:

- Educational games (e.g. informing users about a disease) 24,1%
- **Behavioral games** (e.g., improving adherence to medication) 27,5%
- **Cognitive games** (e.g., memory training) 3,3%
- **Exercise games** (e.g., improving physical exercise) 27,5%
- Rehabilitation games (e.g., rehabilitation of upper extremity) 29,5 %
- Hybrid games (i.e., a mix of others).) 12,0%

(Kharrazi et al. 2012)



Benefits of educational games in children

Most of the research is considering nutritional dietary promotion, diabetes education and asthma education in children

- Games are most potential in supporting:
 - healthier dietary choices
 - self-efficacy
 - self care behaviors
 - Health related Informational needs

However, research and evidence is still limited...

(Hieftje ym. 2013; DeShazo ym. 2010; Guy ym. 2011; Papastergiou 2009)



DIFFERENT APPROACHES FOR RESEARCH

- **Game as Content** focuses on the artistic assets (e.g. graphics, animation, audio, storyboard)
- Game as a Creation focuses on the analysis of games in different contexts and on the design of games (e.g. implementing the health promotion theory)
- Game as a System focuses on the implementation of the game mechanics and interfaces utilizing game technology (e.g. game engines)
- Game as a Product focuses on the productization of a game (e.g. the production process, marketing and business aspects)





FIG. 1. Four types of games for health.

(Baranowski et al. 2015)

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Both eHealth and health game interventions have reported positive outcomes or shown promise for further positive outcomes on health behavior. ^(Jacobs et al. 2014, Baranowski et al. 2015, DeSmet et al. 2016)

- Both healthy people and people with different health conditions, disabilities or risk factors as well as children and adolescents benefit for health games. ^(Jacobs et al. 2014, Baranowski et al. 2015)
- Interventions with a health literacy component were associated with significant positive changes in health outcome and/or health literacy scores. ^(Jacobs et al. 2014)
- Also games for health are exciting and potentially highly effective methods for increasing knowledge, delivering persuasive messages, changing behaviors and influencing health outcomes. (Baranowski et al. 2015)
- Preliminary evidence suggests that games for health can positively influence developmental (especially cognitive) outcomes among children. (Baranowski et al. 2015)

Turun yliopisto University of Turku OUTCOMES OF eHEALTH INTERVENTIONS AND GAMES FOR HEALTH 2/2

Health game studies in which the target group was involved as informants or codesigners (i.e. participatory design) were less effective than studies in which the group was only involved as testers. (DeSmet et al. 2016)

• However, certain types of participatory design may be more effective ^{DeSmet et al. 2016})

There are mixed results from eHealth interventions to improve health literacy. ^(Jacobs et al. 2014)

There is only little research on possible adverse effects of games for health. (Baranowski et al. 2015)

- \rightarrow Thus, further research is still needed to identify and test:
 - the effective mechanisms and components (Jacobs et al. 2014, Baranowski et al. 2015)
 - contextual factors influencing outcomes (Baranowski et al. 2015)
 - cost-effectiveness in different contexts (Jacobs et al. 2014)
 - how to best involve users in games for health design (DeSmet et al. 2016)





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TEPE – RESEARCH GROUP ON HEALTH GAMES





Research Group on Health Games

TEPE –

- TEPE is a joint research group of the departments of nursing science and information technology (leaders: prof. Sanna Salanterä, prof. Ville Leppänen & docent Jouni Smed)
 - We also collaborate with several other national and international partners
 - •The aim of TEPE is to find new, innovative and interesting methods to promote health by designing, developing and evaluating game-based solutions
 - Main target groups are children and adolescents





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FUN-PROJECT



- The aim of the FUN project is to promote physical activity in children with cancer with an active video game based intervention.
- More information Lotta Hamari: lotta.hamari@utu.fi



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Study protocol

Open Access

Active video games to promote physical activity in children with cancer: a randomized clinical trial with follow-up

Lotta Kauhanen^{1*}, Liisa Järvelä², Päivi M Lähteenmäki², Mikko Arola⁴, Olli J Heinonen⁵, Anna Axelin¹, Johan Lilius⁶, Tero Vahlberg⁷ and Sanna Salanterä¹³





Movenator-PROJECT

- The aim of the *Movenator* project is to develop a schoolbased game-intervention for 10 to 13 years old preadolescents, and to evaluate the feasibility and effectiveness of the intervention
- The goal of the project is to promote the physical activity (PA) and PA self-efficacy of pre-adolescents.
- More information Anni Pakarinen: anni.pakarinen@utu.fi









- The aim of WellWe (HyväMe) project is to develop and evaluate an application including game elements for pre-school children, their families and healthcare professionals at child health clinics.
- The application is concentrating on promoting the family's healthy nutrition, physical activity and resources needed to support their wellbeing in their daily life.
- More information Anni Pakarinen: anni.pakarinen@utu.fi





- WellWe application has been developed, together with research group, children and their families and Child health clinics
- The first pilot test has been conducted during fall 2015 and the second evaluation phase is planned for spring 2017











NO! To Smoking -PROJECT

- The aim of the NO! To Smoking project is to study the needs of today's youth related to smoking preventing health education and health literacy
- The aim is also to design and evaluate a smoking preventive game as a health education method in 10–13-years old early adolescents









NO! To Smoking

- A game named *FUME* has been developed, together with research group, adolescents and game company NordicEdu
- The first pilot testing is planned for this spring





Do you want to catch the bus in the future?

Smokers have more mucous in their bronchial tubes, which clogs them and makes breathing more difficult. On the other hand, snuff places more stress on the heart and makes it harder for the heart to pump blood to the muscles. Think about what this means for your fitness. Even your grandma could probably beat you...











EmpowerKids— project

- **EmpowerKids-project** addresses social exclusion and inadequate health information and social advice among the children in low-income families in Estonia, Finland and Latvia.
- Project is co-financed by Central Baltic Programme 2014-2020
- Currently, health and social workers lack methods for promoting daily healthy choices for young children in families with low socio-economic status.
- **Partners:** Baltic Region Healthy Cities Association (Lead partner), Tallinn University Rakvere college, Jurmala City
- The project results will be widely distributed through the existing and developing networks in Central Baltic and beyond.



BALTIC REGION HEALTHY CITIES ASSOCIATION







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EmpowerKids- project

- Project will be working with an interview-based interactive tool that will facilitate health and social advices for children and their families.
- The tool will utilize targeted counselling and interventions, according to the real needs of the children.
- The cross-border cooperation will allow partners to learn from each other, share experiences and support each other with their specific expertise.
- Target group:
 - > Families: 7 to 12 years old children (and their parents)
 - > Professionals: health care personnel, social workers and kindergarten/school teachers
- GOALS:
 - > children that are able to make healthy choices in their daily lives
 - > improved quality of health promotion and social work in participating municipalities
 - > enhanced social inclusion of children from vulnerable groups,
 - increased knowledge of health care personnel, social workers and kindergarten teachers about the empowering tools and methods.













EmpowerKids-tool in practice

- Digital, internet-based application has "garden" theme
- EmpowerKids includes four sections: physical activity-, nutrition-, everyday resources- and daily activity
- Children assess their health and wellbeing as well as factors affecting it through these four sections
- They get instant feedback from the tool according to their daily health choices (visual and textual)
- Professionals receive information on the children's gameplay through tool
- Professionals can use this information in health counseling











COUNTRY LEVEL INTERVENTION WELFARE REPORT IN FINLAND



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LAWS AND WELFARE REPORT

Kuntarajat: Tilastokeskus

- The duties of municipal authorities throughout Finland to arrange social and health care are stipulated by laws on social and health care planning and the central government transfers to local government.
- Laws on health care, primary health care and specialized medical care cover health services
 - The Health Care Act (1326/2010 § 12) obliges the municipalities to prepare the Welfare Report once in a council season
 - The Welfare Report serves as the foundation of the promotion of the welfare of the inhabitants of the municipality



WHAT IS WELFARE REPORT?

- The Welfare Report collects multidisciplinary information about the health of the inhabitants, welfare and health differences and factors which affect them
 - According to which the objectives are set and actions are planned
- The Welfare Report is an important part of the planning, realization and evaluation of the operation and economy of the municipality
 - Used as a tool for the municipalities welfare management



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HOW IS WELFARE REPORT PREPARED?

- The Welfare Report is prepared once in a council season and updated every year as a part of the planning of the municipality
- Different actors participate in the compilation process of the Welfare Report widely
 - The local council, local government, municipal manager, the management team of the municipality, forums of experts and the inhabitants of the municipality, a Welfare report team and the teams of branches
- Throughout municipalities Welfare Report is prepared with the same electric tool and with the congruent basic indicators
 - Allows comparisons between the municipalities and the areas





ANALYSIS OF WELFARE REPORTS SOUTHWEST FINLAND

We analyzed Planned actions

- Did the planned actions apply to all the population groups?
- > What were the priorities of the planned actions?



- 1. Responsibility and healthy habits
- 2. Health welfare differences and social exclusion
- 3 Communality and involvement
- 4. Safety
- 5. Living and environment
- 6. Welfare and safety know-how
- 7. Other priority areas

POPULATION GROUPS

- A. Children and families with children
- B. Young and young adults
- C. Of working age
- D. Elderly persons
- E. Special groups
- F. All groups ("General")



RESULTS priorities

division of planned actions according to the priorities



- Responsibility and healthy habits
- Health welfare differences and social exclusion
- Communality and involvement
- Safety
- Living and environment
- Welfare and safety know-how
- Other priority areas



RESULTS population groups

division of planned actions according to the population group







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