

“IPLOS” - Countable Care?

Use of Care Mapping for Statistical Purposes in Norwegian Municipalities – What are the Challenges for Nurses?

Jorunn Bjerkan¹, Hildfrid Brataas^{1,2}, Une Hallem³

¹Nord University, dept. of Health Science, Levanger, Norway

²Centre for Care Research Mid-Norway, Steinkjer, Norway

³Municipality of Verdal, Norway

Abstract. Introduction: “IPLOS” is a central health register providing the basis for mandatory national statistics on care in Norwegian municipalities. Data are entered in IPLOS under 16 variables, for example “dressing” or “social behavior”. A score reflecting the care level is assigned for each variable. The aim of this study was to explore knowledge, skills and needs for increased competence in IPLOS mapping among care providers and to pilot a collaborative “World Café” training intervention. Methods: A three-step sequential approach starting with a questionnaire, followed by field observation of an intervention using the “World Café” method. The third step was a follow-up questionnaire. Results: The first questionnaire showed that four IPLOS variables were challenging to map and score. The World Café activated the participants through discussions and reflections. The second questionnaire showed no general improvement in mapping skills. Discussion and conclusion: The nurses obtained an insight into their own IPLOS competence and lack of competence, and their motivation for mapping. There seems to be a need for more experience-based learning during everyday practice.

Keywords. Nursing assessment, municipal care, statistics, electronic patient records, World Café method.

1 Introduction

In Norway, IPLOS is a tool for documenting and reporting care needs in municipalities [1]. The system type and amount statistics of care required to meet all individual patients' needs, and is used for organizing healthcare. Health care personnel in Norwegian municipalities carry out the care mapping for planning and statistical purposes. This study explored care providers' perceptions on IPLOS mapping challenges, and their experiences of learning additional mapping skills by attending a World Café intervention.

Copyright © 2016 by the paper's authors. Copying permitted for private and academic purposes.

*In: G. Cumming, T. French, H. Gilstad, M.G. Jaatun, E.A.A. Jaatun (eds.):
Proceedings of the 3rd European Workshop on Practical Aspects of Health Informatics
(PAHI 2015), Elgin, Scotland, UK, 27-OCT-2015, published at <http://ceur-ws.org>*

Individual-based statistics for nursing and care services (IPLOS) is a Norwegian system of care mapping. The name “IPLOS” is an acronym for “Individbasert pleie- og omsorgsstatistikk”, in English: “Statistics linked to individual needs for care”. IPLOS was introduced in 2006 as a basis for mandatory national statistics for municipal care. IPLOS information is collected about each individual patient or care service recipient in care planning and care practice. (see Table 1 for an overview of the variables and score levels). IPLOS mapping is carried out as soon as care needs occur or change, unless the change is temporary. It is then followed up regularly. National authorities collect municipal IPLOS statistics twice a year. The objectives are to gain systematic knowledge of care in Norwegian municipalities, to develop quality of care and to utilize resources optimally. IPLOS information is also used for improving equality of care between municipalities, or even among care recipients individually [1].

Table 1 IPLOS variable and score levels

Variables:	Score levels:
Daily housework Food and goods supply Personal hygiene Dressing/undressing Toilet routines Eating Walk around in house Walk around outside Take care of own health Memory Communication Daily life decisions Social activities Control own behaviour	Score 1: No problems or challenges Score 2: No need for help/assistance Score 3: Some need for help/assistance Score 4: Great need for help/assistance Score 5: Total need for help/assistance Score 9: Not applicable
Vision Hearing	Score 1: Normal vision/hearing Score 2: Slight visual/hearing impairment Score 3: Moderate visual/hearing impairment Score 4: Severe visual/hearing impairment Score 5: Blind or deaf Score 9: Not applicable

Municipal care providers in Norway document healthcare in electronic health records (EHRs) [2]. The three main EPR systems used in Norwegian municipalities all include domains for IPLOS registration. System functionality varies from full

integration between daily care documentation and IPLOS registration to separate domains for daily care documentation and IPLOS registration.

Implementing IPLOS, municipalities experienced discrepancies in IPLOS mapping and documentation practices in different care districts. Therefore, one municipality in mid-Norway conducted an internal survey on nurses' practice and knowledge about IPLOS mapping [3]. Nurses in the municipality expressed a need for more training in IPLOS documentation. Our study was a follow-up. Were all the IPLOS variables and criteria well understood? Could a collaborative learning intervention lead to more knowledge and shared understanding of the IPLOS mapping among the care providers?

Aim of the study:

- To gain insight into which variables were hard to map and score correctly according to the criteria for the IPLOS variables.
- To find out whether care providers experienced any IPLOS variables as challenging to understand.
- To explore whether the World Café method could stimulate collaborative learning and increase competence in IPLOS mapping and scoring among care providers.

2 Methods

In this study, we applied a multi-method, three-step sequential approach:

- 1: An initial questionnaire with questions on the 16 IPLOS variables as well as some questions on the ICT system used.
- 2: Field observation of an intervention using the "World Café" method.
- 3: A follow-up questionnaire with identical questions to the initial questionnaire to evaluate the result of the intervention.

This study was carried out in a medium-sized municipality in mid-Norway (14000-15000 inhabitants in 2011).

2.1 Sample and sampling

The sample was information-rich and homogeneous [4] in that the respondents were nurses and nursing assistants in health care services in the municipality who worked with IPLOS mapping. Nurses and nurse assistants at one ward in a nursing home and in one care district of the municipality were included. The 29 registered nurses (bachelor's degree level) and the 17 nursing assistants (technical college level) working part-time or in fulltime positions at these two sites were asked to participate in the study. An information note from the researchers requesting participation was

distributed in advance of the study. This study started in January 2011. The World Café seminars took place during two weeks in April/May, and the last questionnaire was distributed 20 weeks after the intervention period.

The objectives of the World Café meetings were 1) to learn from university college teachers, 2) to engage in meaningful conversations about the four IPLOS variables that were experienced as difficult to score, and 3) to promote future IPLOS scoring competence experiences among the World Café participants. The World Café format [5] created a dialog in order to explore questions in small group discussions and co-create a learning culture aimed at raising the nurses' competence in future scoring practice. "The World Café is a simple yet powerful conversational process that helps people engage in constructive dialogue, build personal relationships, foster collaborative learning, and discover new possibilities for action". The World Café method is useful for creating dialogs and stimulating learning through reflection [6, 7]. The World Café method emphasizes an informal style and atmosphere, without a focus on the performance of the participants [7]. The philosophy behind World Café education is that each person has his or her interpretations and mental models of the world, and individuals can broaden their understanding only by sharing viewpoints and learning about alternative interpretations and understanding of various alternatives for action [8].

2.2 The questionnaires

The questionnaires were developed especially for this study, because no representative and validated questionnaire was found. We arranged a pilot test of the initial questionnaire among 11 nurses who were using IPLOS mapping in a neighboring municipality. After receiving their responses, we modified two questions linguistically.

The questionnaires focused on two main areas:

- Understanding of IPLOS as a system for mapping nursing interventions and care needs.
- Understanding of IPLOS registration challenges finding the correct level for scoring care needs.

A third, minor area of the questionnaire focused on ICT system challenges in mapping and scoring IPLOS variables.

The initial and follow-up questionnaires had identical questions about IPLOS registration. There were four alternatives for answers in a Likert scale: Totally agree, agree somewhat, disagree somewhat and totally disagree. Some parts of the questionnaires included open areas for complementary comments. Questionnaires were analyzed using SPSS 19, frequency analyses.

We used the results from questionnaire 1 for the following intervention, the World Café. In a World Café process, each table has its own host. Groups of five to seven participants circulate between the "café tables", discussing the theme in focus at each

table. We arranged three café sessions each covering one or two of the four themes identified in the responses to questionnaire one. To involve the participants working shift hours, each café session was repeated once. Each session lasted for two hours.

Nurse education professors or assistant professors at the University College of Nord-Trøndelag introduced each theme. After the introductions, the discussions at each table started. For each group, the discussion at the table lasted for 15 minutes. The groups then moved to the following two tables for 15 minutes each. At each table, the host had prepared relevant questions to reflect upon within the theme, served coffee and cakes, and stimulated discussion without interfering with the results of the discussion. The participating groups documented their IPLOS challenges, reflections, discussions and ideas for improvements. They sketched on paper at each table in a way that was not focused on performance. The results from all participating groups were collected and discussed in a plenary summary at the end of each seminar [3].

The second questionnaire was distributed to participants 20 weeks after the intervention. The period was chosen in order to allow time for IPLOS mapping experiences and collaboration.

2.3 Ethics

The research project was approved by the Norwegian Social Science Data Services (NSD). Participation in the study was voluntary. Department heads provided verbal information to their employees before the questionnaires were distributed to respondents. Written information and a consent form accompanied the distributed questionnaires and the World Café intervention part of the study. All information was kept confidential.

3 Results

3.1 The initial questionnaire

We received 19 answers for the first questionnaire, a response rate of 41.3 % of the nurses and nurse assistants asked to participate in the study. The results showed that four variables were more challenging than others to map correctly and document in a proper nursing professional style; results are presented in the next paragraph, and in Table 2. The results also showed that scoring “Some need for help/assistance” was less challenging than other levels and that scoring “Great need for help/assistance” was more challenging than other scoring levels.

3.2 The field study of the “World Café” intervention

In total, 46 health care personnel (29 nurses and 17 nursing assistants) participated in the seminars. Based on the results from the initial questionnaire, three themes that refer to the four ‘difficult’ variables were introduced, and thereafter discussed in the seminars:

1. To control one’s own behavior.
2. To take care of one’s own health, AND to make daily life decisions (two variables in one seminar).
3. To participate in social activities.

The results from these seminars showed that participants reflected upon each of the challenging IPLOS variables in a professional way. They discussed which data and which identification of patient needs by nurses would be relevant to include in IPLOS mapping, and how to score variables at correct levels.

1. “To control one’s own behavior” was regarded as referring to both verbal and physical behavior related to each individual health situation, illness and emotional balance. The seminar participant’s interpretations of behavior and causal connections then influenced criteria for score levels. Challenges in understanding of the “behavior” variable were the staff’s acceptance level for “uncontrolled” behavior, and variations for each patient during a day, e.g. in connection with patients with dementia.
2. “To take care of one’s own health and to make daily life decisions”: The participants showed little confidence in scoring these variables. They discussed the patients’ scope and capability for decision-making and the difference between scoring these variables in a home-care situation and in an institutional situation.
3. “To participate in social activities”: Motivation for and confidence in the situation were elements highlighted in the discussion about the patient’s social life. Challenges were factors such as scoring the possibility of active living and needs for activity for the patients. Individual mapping including available background information about individual patients was regarded as essential.

Summarizing comments from seminar participants were: “It is necessary to implement IPLOS mapping routines”, and “All my colleagues should have participated here”. Participants suggested changes in mapping practice, scoring more frequently and pairs of two nurses mapping IPLOS.

3.3 The follow-up questionnaire

The second questionnaire was distributed to 15 nurses who had participated in two or three seminars. Fourteen nurses answered (93.3 %). Comparing results from questionnaire 1 and 2, we found minor, but no clear changes in understanding the meaning of each IPLOS variables. See Table 2.

Table 2, "I know what these IPLOS variables mean", responses from questionnaires before and after intervention.

IPLOS Variable	Survey number, and sample size	Response alternatives		
		Totally agree	Somewhat agree	Somewhat or totally disagree
Social	1st questionnaire, <i>n</i> 19	7 (36.8%)	8 (42.1%)	4 (21.1%)
Activities	2nd questionnaire, <i>n</i> 14	4 (28.6%)	7 (50.0%)	3 (21.4%)
Take care of own health	1st questionnaire, <i>n</i> 19	8 (42.1%)	7 (36.8%)	4 (21.1%)
	2nd questionnaire, <i>n</i> 14	6 (42.9%)	6 (42.9%)	2 (14.3%)
Daily life decisions	1st questionnaire, <i>n</i> 19	5 (26.3%)	9 (47.4%)	5 (26.3%)
	2nd questionnaire, <i>n</i> 14	7 (50.0%)	4 (28.6%)	3 (21.4%)
Control own Behaviour	1st questionnaire, <i>n</i> 19	6 (31.6%)	8 (42.1%)	5 (26.3%)
	2nd questionnaire, <i>n</i> 14	5 (35.7%)	8 (57.1%)	1 (7.1%)

Was there a difference in knowledge about how to score each IPLOS variable from the first to the second survey? Comparing the results, we found changes from questionnaire 1 to questionnaire 2. The majority of answers showed increased understanding for the "somewhat agree" statement. Fewer nurses totally disagreed with the statement on knowing how to score all IPLOS variables after the intervention. For those who totally agreed that they knew how to score some of the variables in the first questionnaire, the results varied from no change to both higher and lower agreement with the statement in the second questionnaire.

Table 3, "I know how to score each IPLOS variable", answers from questionnaires before and after intervention.

Score levels:	Survey number, " and sample size	Response alternatives		
		Totally agree	Somewhat agree	Somewhat or totally disagree
Score no 1: No problems or challenges	1st questionnaire, n 19	4 (21.1%)	5 (26.3%)	9 (47.4%)
	2nd questionnaire, n 14	1 (7.1%)	10 (71.4%)	3 (21.4%)
Score no 2: No need for assistance	1st questionnaire, n 19	5 (26.3%)	4 (21.1%)	7 (36.8%)
	2nd questionnaire, n 14	10 (71.4%)	3 (21.4%)	1 (7.1%)
Score no 3: Some need for assistance	1st questionnaire, n 19	3 (15.8%)	7 (36.8%)	6 (31.6%)
	2nd questionnaire, n 14	3 (21.4%)	11 (78.6%)	0
Score no 4: Great need for assistance	1st questionnaire, n 19	6 (31.6%)	1 (5.3%)	9 (47.4%)
	2nd questionnaire, n 14	1 (7.1%)	9 (64.3%)	3 (21.4%)
Score no 5: Need for full assistance	1st questionnaire, n 19	4 (21.1%)	3 (15.8%)	9 (47.4%)
	2nd questionnaire, n 14	2 (14.3%)	8 (57.1%)	4 (28.6%)
Score no 9: Not applicable	1st questionnaire, n 19	7 (36.8%)	1 (5.3%)	7 (36.8%)
	2nd questionnaire, n 14	5 (35.7%)	3 (21.4%)	6 (42.9%)

The responses to the initial questionnaire did not highlight ICT as one of the major challenges in mapping practice, thus this subject was not specifically addressed in the World Café seminars. The answers in the second questionnaire nevertheless showed that fewer nurses answered 'totally agree' when asked whether they had had suitable ICT training after the intervention period than in questionnaire 1, before the intervention.

Asked if they thought the EHR system was difficult to use for mapping and scoring IPLOS variables, more nurses totally agreed with that statement *after* than *before* the intervention, and vice versa: more nurses totally disagreed to the statement *before* than *after* the intervention.

Table 4, ICT training and documenting challenges in the EPR system. Answers from questionnaires before and after intervention.

Survey questions	Survey number, and sample size	Response alternatives		
		Totally agree	Somewhat Agree	Somewhat or totally disagree
Suitable ICT system training for IPLOS mapping	1st questionnaire, n 19	13 (68.4%)	1 (5,3%)	5 (26.4%)
	2nd questionnaire, n 14	3 (21.4%)	8 (57.1%)	3 (21.4%)
Difficult to use the EHR system for IPLOS mapping	1st questionnaire, n 19	1 (5.3%)	10 (52.6%)	7 (36.8%)
	2nd questionnaire, n 14	5 (35.7%)	7 (50.0%)	2 (14.2%)

4 Discussion

The first survey identified challenging areas of IPLOS mapping. The World Café activated the participants by discussions and reflections, but the second questionnaire did not indicate an improvement in their understanding of the ‘difficult’ IPLOS variables. There seems to be some change in their knowledge about how to score each IPLOS variable.

- Understanding IPLOS as a system for mapping needs for nursing care seems to be changing among the participants. Motivation for IPLOS mapping was expressed during the intervention. The results from the second survey did not reflect change in understanding and mapping practices.
- Understanding IPLOS registration challenges due to scoring the intervention needs at a correct level still seemed problematic several weeks after the intervention.

It is uncertain whether the World Café participants had any learning outcome from lectures given by the teachers of the University College. On the other hand, the findings showed that the participants in the World Café seminars discussed both relevant professional matters and technical mapping problems. The occurrence of open discussions is consistent with World Café method theory [7, 8]. We found that participants showed interest in increasing their competence, but results from questionnaire 2 showed no clear indication of increased mapping or scoring competence.

The World Café method is considered to be a suitable methodology for educating groups of people [6, 7]. In this project, the World Café method seem to be useful for creating dialogs and to stimulate learning through reflection, in line with other research findings [6, 7]. The participants were also motivated for collaborative learning by suggesting mapping IPLOS variables together in pairs. This is also in accordance with World Café method theory [5, 7]. In line with the philosophy of the World Café method [8], participants expressed their own perspectives, collaborated, and extended their knowledge.

The data from the questionnaires and the seminars showed a change in understanding of the content of IPLOS variables. The results from the World Café method may indicate learning as described in the theory of group-based experiential learning through reflection on experience from practical professional work [9]. On the other hand, the results of this study do not indicate that use of a World Café method improved the care staff’s confidence in their own IPLOS mapping and scoring competence, and therefore they were motivated for more collaborative learning and mapping practice. This corresponds with results regarding needs for ICT training and learning about how to overcome EHR documentation challenges regarding IPLOS mapping.

The intervention in this study, and use of the World Café method, relied on the nurse’s experience-based knowledge. During the World Café discussions, they could support each other in learning about the four mapping variables they all seem to feel uncertain about. By collaborating, they could gain knowledge from the “zone of proximal development” [10]; the zone of what was difficult was about the same for all

participants. This could lead to a feeling of equality that supported the collaborative discussions underlined as a philosophy of the World Café method [8]. This may have led to an increase in collaborative learning confidence as well as a stronger focus on participants' own mapping and scoring challenges seen in the results of the second questionnaire. We consider this to be relevant learning in the sense that nurses obtained an insight in their own IPLOS competence and even more important; insights into areas where they did not have enough knowledge.

During everyday nursing practice, IPLOS mapping should be learned gradually, like learning other complex skills. Ways of working that include organizational changes and ICT systems have been found to take 17 years to implement [11, 12]. People learn from remembering something and may then analyse and evaluate knowledge, and in the end learn to use the knowledge in a situation-based way [13]. In the learning process during the World Café seminars, the participants stated that they had increased their understanding of IPLOS mapping and scoring as such. Understanding the challenge in utilizing this knowledge also seemed to increase. In line with theory and research underlining that learning about new mapping systems and change of practice may last several years, our results underline a need for more time for learning activities [14]. The World Café created an opportunity for reflections, although these were not necessarily followed up in daily mapping practices. From the World Café experiences, we learned that nurses wanted to sit down together in pairs to discuss, map and document the IPLOS variables and scores before entering the results in the patient EHRs. This collaboration during mapping practice may support learning in a situation-based way [13]. On the other hand, there seemed to be a need for development of methods and tools to support nurses in their learning and mapping of countable care. After completion of this study, the Norwegian Directorate of Health has identified training needs [15, 16], and generated an e-learning platform to support nurses in learning IPLOS mapping practice [17].

4.1 Study limitations

No validated questionnaires regarding content, criteria and knowledge about IPLOS variable scoring were found. Another limitation was the low number of participants in the study. To obtain statistically significant results, there is a need for larger samples in future research. Respondents from only two care entities of one municipality also represented a limitation that may make the results of the study less representative.

5 Conclusion

Charting experiences of challenging IPLOS variables and scoring levels, followed by three World Café seminars, seemed to support the participants in obtaining an insight into their own IPLOS competence and lack of competence, and to heighten their motivation for mapping. The results indicate that collaborative learning and reflection during World Café sessions may provide more insight into each participant's

knowledge level. There seemed to be a need for more training to achieve relevant competence and a need for more experience-based learning during daily practice.

Acknowledgments We want to thank the nurses who answered our questionnaires and participated in the World Café seminars. We also want to thank Gunn Wolden, Aud Moe and Bente Northug for being lectures in the World Café seminars. Finally, thanks to Margaret Forbes for her contribution in improving the language of the article.

References

1. IPLOS: Veileder for personell i kommunale helse- og sosialtenester [The Norwegian Directorate of Health: IPLOS guidelines for personnel in municipal health and social care services] Helsedirektoratet, Oslo (2009)
2. EPJ MONITOR: Oversikt over utbredelse og bruk av IKT i helsetjenesten [EPR Monitor. Annual report 2008 - Overview of prevalence and use of ICT in healthcare services]. NTNU, Trondheim (2010)
3. Hallem, U., Bjerkan, J., Brataas, H.: IPLOS som sykepleiefaglig vurderingsverktøy: Behov for og nytte av kompetansehevede utviklingsarbeid [Iplos an a tool for nursing assessment: a need for and benefit of rise in competences]. HiNT-publikasjoner rapport nr 80, (2012)
4. Polit, D.F., Beck, C.T.: Essentials of nursing research: Appraising evidence for nursing practice. Wolters Kluwer Health (2013)
5. Tan, S., Brown, J.: The World Café in Singapore Creating a Learning Culture Through Dialogue. *The Journal of Applied Behavioral Science* 41, 83-90 (2005)
6. Alnes, R.E., Vågen, S.R., Midbust, M.H., Krøvel, B.S.: Dialogkafé og refleksjonsgrupper som et virkemiddel i kontinuerlig forbedringsarbeid i hjemmetjenestene [World Café method and reflection groups as a tool for continous improvement in home care services] (2013)
7. Brown, J., Isaacs, D.: The world café: Shaping our futures through conversations that matter. Berrett-Koehler Publishers (2005)
8. Schieffer, A., Isaacs, D., Gyllenpalm, B.: The world café: part one. *World Business Academy* 18, 1-9 (2004)
9. Beverley, A., Worsley, A.: Learning and teaching in social work practice. Palgrave Macmillan (2007)
10. Vygotsky, L.S.: Mind in society: The development of higher psychological processes. Harvard university press (1980)
11. Balas, E.A.: Information systems can prevent errors and improve quality. *Journal of the American Medical Informatics Association* 8, 398-399 (2001)
12. Tichansky, D.S., Morton, J., Jones, D.B.: The SAGES Manual of Quality, Outcomes and Patient Safety. Springer Science & Business Media (2011)
13. Anderson, L., Krathwohl, D.R.: A taxonomy for learning, teaching, and assessing: A revision of bloom's taxonomy of educational objectives. Allyn & Bacon. Boston, MA (Pearson Education Group) (2001)
14. Benner, P., Sutphen, M., Leonard, V., Day, L.: Educating nurses: A call for radical transformation. John Wiley & Sons (2009)
15. Kjelvik, J., Herbern, S.M., Helsedirektoratet: Diagnoser i IPLOS-registeret [Diagnoses in the IPLOS-index]. Helsedirektoratet, Oslo (2014)

16. Herbern, S.M., Grimeland, M.O.: Hvordan benytter kommunene seg av og vedlikeholder IPLOS-dataene? -En undersøkelse til norske kommuner [Exploring use- and maintenance of IPLOS-data in Norwegian municipalities]. In: Helsedirektoratet (ed.), (2014)
17. <https://helsedirektoratet.no/iplos-registeret/iplos-e-leringskurs>