

Promoting safe prescribing practice and interprofessional working: a workshop follow-up evaluation

## **Abstract**

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**Background** The safe prescribing of medicines requires successful inter-professional working. One way to facilitate this is to develop inter-professional education across disciplines. This paper presents findings from a follow-up evaluation of an inter-professional workshop for prescribing safety to assess the perceptions and attitudes toward working inter-professionally in non-medical prescribers (NMPs) and MPharm students. The objectives sought to further validate an internal workshop questionnaire and the use of the of a scale to assess the readiness for inter-professional learning. **Methods** An inter-professional workshop centred around the issue of prescriptions, and determinants of competence and safety was attended by 126 NMPs and MPharm students. The workshop was evaluated using the *Readiness for Inter-Professional Learning* (RIPLS) questionnaire and an internally-produced evaluation in a process which concurrently assessed the internal reliability of the internally-produced evaluation. **Results** The workshop was rated highly by all participants with overall positivity toward working inter-professionally. There was no evidence that NMPs and students rated the workshop significantly differently, but MPharm students scored slightly higher than NMPs on one domain of the internally produced instrument. All domains of this instrument demonstrated good internal consistency. **Conclusion** The workshop overall was received well and appears to meet the standards set out by CAIPE (2016). While reliability measures of the internally produced instrument are promising, further work is needed to develop internal validity; and to determine whether any adaptations to the RIPLS scale are needed for subsequent use with different groups of participants.

## **Introduction**

Whether or not health practitioners, rather than doctors, should prescribe medicines is now not a debate; it is now embedded with good outcomes (i5 2018). However, the challenge is to ensure that the education and training of increasing numbers of non-medical prescribers (NMPs) promotes competence and safe prescribing. As this responsibility falls to both employing organisations and individual NMPs, organisationally the NMP needs a supportive structure where supervision, governance and a clear role is set out for the novice prescriber

(Hemingway & Ely, 2009). Individually the NMP needs to work within their scope of practice and develop as per role specification, and incorporate all the determinants of safe prescribing (RPS, 2016). One such determinant is establishing successful inter-professional working appropriate to the context of care and prescribing focus (Hemingway et al, 2019).

The broader facilitation of prescribing and medicines optimisation by inter-professional working is now embedded both clinically (RPS, 2016) and educationally (Davies & Gidman, 2011). The University of Huddersfield has a recent history of facilitating inter-professional education involving medicines (Hemingway et al, 2019). The aim of these workshops is to cultivate collaborative working with the aim of improving patient care in the area of prescribing, in line with the CAPIE guidelines (2016). Students work alongside each other to problem-solve simulated patient cases, where the expertise and input of each profession is required to achieve a favourable outcome for the patient. Students are given the opportunity to learn with, from and about each other, and are exposed early on to the multidisciplinary environment in which they will be working.

This paper presents a follow-up appraisal to an inter-professional safe prescribing workshop (Hemingway 2019) measured by two instruments. A more in-depth rationale including literature review is available elsewhere (Hemingway et al, 2019). Further motivation for this study was to assess reliability of an internally-produced workshop evaluation (Hemingway et al, 2019), and to determine whether the workshop increased student readiness for inter-professional learning.

## **Methods**

The aim of effective inter-professional education is to be instrumental in facilitating communication and collaboration between practitioners who can work in partnership to resolve problems and provide effective care. With this in mind, joint working between student NMPs (nurses, podiatrists and physiotherapists) and 4<sup>th</sup> year MPharm students (in the final year of an undergraduate pharmacy degree) was introduced in the form of an inter-professional workshop centred around the issue of prescriptions, and determinants of competence and safety. The University now include paramedic and pharmacy students on the NMP Course but did not at the time of this evaluation. The two groups had a major

focus on safety; as the future experience of one group (student NMPs) would involve prescribing medication, and the other group (pharmacy students) would be dispensing and supplying medication in the very near future after successful completion of their courses.

The workshop was underpinned by the *Process, Knowledge* and *Relationships* aspects of prescribing medicines optimally (Hemingway et al, 2019). *Process* refers to the fact that safe and effective prescribers and pharmacists, as dispensers, need to understand the processes by which medicines are prescribed, supplied and administered; thus a collaborative approach is needed (Cooke et al, 2017). *Knowledge* refers to the fact that the NMP as prescriber and pharmacist in their dispensing role must be able to identify and understand the patient's condition and the use of their chosen agent. The drug chosen has to have a suitable dose, formulation and dose regime, and must include safety considerations and contra-indications in their choice (Greenwood, Horncastle & Stephenson, 2016).

*Relationships* refers to the fact that evidence exists that the best outcomes for patients are achieved by effective inter-professional working. Improved understanding leads to mutual respect and increases the likelihood of inter-professional referral and shared working (Davies & Gidman, 2011). These three domains corresponded to the domains of one of the instruments utilised to assess the workshop; the internally-produced *Workshop Evaluation Questionnaire* (Hemingway et al, 2019). A second instrument, the *Readiness for Inter-Professional Learning* (RIPLS) questionnaire (Parsell et al, 1999), was also utilised in the assessment of the workshop. This instrument included the following domains: *Team-work and Collaboration, Professional Identity* and *Roles and Responsibilities*. The RIPLS scale has had various adaptations to suit the sample and context needed, but it was decided to retain the original iteration (Parsell et al, 2019), as undergraduate (MPharm) and graduate (NMP) students together or as a contrasting sample had yet to be evaluated.

Both instruments were distributed after the workshop was completed. Respondents were asked to put each one in an assigned box. There was no identifying content on the questionnaire.

The aim of this study was to assess the perceptions of an inter-professional workshop and attitudes toward working inter-professionally for NMPs and MPharm students. The following objectives were set to fulfil this aim:

- 1) To assess workshop outcomes for the safe prescription of medicines and inter-professional working, using cross sectional questionnaires; evaluating aspects of inter-professional working and readiness for inter-professional working.
- 2) To evaluate the reliability of the internal workshop evaluation as an instrument for inter-professional medicines safety workshops.
- 3) To determine whether the workshops have given any new insights into the development of medicines safety workshops.

### *Statistical Methods*

Data was collected by NMP and MPharm students attending the workshop. Respondents were requested to complete both the RIPLS questionnaire (Parsell et al, 1999) and the *Workshop Evaluation Questionnaire* (Hemingway et al, 2019). The RIPLS questionnaire consisted of nineteen 5-point Likert items, with the *Team-work and Collaboration* domain comprising 9 items; the *Professional Identity* domain comprising 7 items and the *Roles and Responsibilities* domain comprising 3 items. Each domain score was calculated as the sum of the scores of individual items in that domain. The *Professional Identity* domain included components of negative and positive professional identity; comprising 3 and 4 items respectively. For this domain, items relating to negative professional identity were reverse coded in order to calculate a meaningful domain score.

The internally-produced *Workshop Evaluation Questionnaire* consisted of nine 6-point Likert items with each of the domains of *Knowledge*, *Process* and *Relationships* comprising three items. Each domain score was calculated as the sum of the scores of individual items in that domain. This questionnaire also elicited respondents' status as either non-medical prescriber (NMP) or pharmacy student (Pharmacist).

Data was checked for the extent of any missingness and the requirement for imputation. The internal consistency of responses associated with each domain in both questionnaires was assessed using Cronbach's alpha coefficient. The scores on each item were summarised

descriptively and compared against theoretical maxima, minima and neutral scores. The correlation of measures was also assessed. The significance of the difference in scores obtained by the two groups of participants (where recorded) was assessed using independent samples *t*-tests (under the assumption of unequal variances); with informally applied Bonferroni corrections where appropriate.

## Results

### *RIPLS questionnaire*

The RIPLS questionnaire was fully completed by 114 respondents. Reliability analysis revealed very good internal consistency between items on the *Team-work and Collaboration* domain ( $\alpha=0.922$ ); good internal consistency between items on the *Professional Identity* domain ( $\alpha=0.770$ ) and moderate internal consistency between items on the *Roles and Responsibilities* domain ( $\alpha=0.569$ ).

Results from this questionnaire are summarised in Table 1.

**Table 1: summary of domain scores (RIPLS instrument)**

Domain	Mean (SD; range)
<i>Team-work and Collaboration</i>	41.0 (4.26; 27 to 45)
<i>Professional Identity</i>	31.1 (3.39; 22 to 35)
<i>Roles and Responsibilities</i>	5.34 (1.96; 3 to 13).

Scores in the *Team-work and Collaboration* domain could vary from 9 to 45, with a uniformly neutral response of 27 and high scores representing positive opinions. Hence the reported scores represented very positive opinions.

Scores in the *Professional Identity* domain could vary from 7 to 35, with a uniformly neutral response of 21 and high scores representing positive opinions. Hence the reported scores represented very positive opinions.

Scores in the *Roles and Responsibilities* domain could vary from 3 to 15, with a uniformly neutral response of 9. Hence the reported scores represented somewhat mixed opinions.

Correlation analyses conducted on the data revealed strong positive correlation between *Team work and Collaboration* and *Professional Identity* which was statistically significant ( $r=0.711$ ; 95% bootstrapped confidence interval (0.580 to 0.833);  $p<0.001$ ). No correlation was revealed to exist between the *Roles and Responsibilities* domain and either of the other two domains.

### *Workshop Evaluation Questionnaire*

The Workshop Evaluation Questionnaire was completed by 126 respondents, comprising 58 NMPs, 30 Pharmacy students and 38 respondents who did not specify their status. Two items in the Relationships domain were worded so as to be applicable only to one group of respondents each: *Profession shares common skills/attitudes with pharmacists* and *Profession shares common skills/attitudes with NMPs*. A new item, *Profession shares common skills/attitudes with interdisciplinary colleagues*, was created for analysis from a combination of these items, which included no missing data. Very low amounts of missing data on other items were recorded, including 3 missing responses to one of the items contributing to the Knowledge domain, and 2 missing responses to one of the items contributing to the Process domain. Scores on these missing items were imputed using mean substitution.

Reliability analysis revealed very good internal consistency between items in the *Knowledge* domain ( $\alpha=0.792$ ); items in the *Process* domain ( $\alpha=0.792$ ); and items in the *Relationships* domain ( $\alpha=0.941$ ).

Results from the workshop evaluation are summarised in Table 2.

**Table 2: summary of workshop evaluation scores**

Domain	Mean (SD; range)
<i>Knowledge</i>	14.8 (2.90; 3 to 18)

<i>Process</i>	14.8 (3.12; 3 to 18)
<i>Relationships</i>	15.7 (3.26; 3 to 18)

In all domains, scores could vary between 3 (most negative responses) and 18 (most positive responses), with scores of 10.5 representing a respondent with neutral feelings in a particular domain. Hence, mean respondent scores were indicative of positive responses in all domains. However, the full range of scores, from completely positive to completely negative, was recorded in all domains.

Correlation analyses conducted on the data revealed strong positive correlations between the *Knowledge* and *Process* domains ( $r=0.880$ , 95% bootstrapped confidence interval 0.795 to 0.928); between the *Knowledge* and *Relationships* domains ( $r=0.880$ ; 95% bootstrapped confidence interval 0.780 to 0.930) and between the *Process* and *Relationships* domains ( $r=0.884$ ; 95% bootstrapped confidence interval 0.794 to 0.936). All correlations were statistically significant ( $p<0.001$  in all cases).

Some substantive difference between the groups was revealed on the *Relationships* domain, in which the MPharm students scored about 1.2 points more than NMPs on average. However, no significant differences between the responses of NMPs and those of pharmacy students were revealed in any domain. Independent samples t-tests (under the assumption of unequal variances) found the (NMP – pharmacy student) difference in means to be 0.113 (95% confidence interval -1.02 to 1.25;  $p=0.843$ ) for *Knowledge* scores; -0.319 (95% confidence interval -1.61 to 0.970;  $p=0.623$ ) for *Process* scores; and -1.20 (95% confidence interval -2.48 to 0.087;  $p=0.067$ ) for *Relationships* scores. No Bonferroni corrections were required to these results due to lack of significance on any domain.

## Discussion

The *Workshop Evaluation Questionnaire* elicited generally very positive responses; very small number of participants gave negative feedback. This effect was observed on all 3

domains of *Knowledge, Process and Relationships*. However, consistency of any observed effect was to be expected, given the high correlations observed within each pair of domains. This was consistent with results obtained from a previous, similar workshop evaluation at Huddersfield (Hemingway et al, 2019). Participant scores on the RIPLS questionnaire were very positive on the *Teamwork and Collaboration* and *Professional Identity* domains, but not on the *Roles and Responsibilities* domain, which elicited decidedly mixed responses.

Hence in general it appears that the workshops are very positively rated by students who see them as valuable in their development to become prescribers. Across participant groups, MPharm students scored slightly higher, albeit not significantly so, on the *Relationships* domain than NMPs, in contrast to the previous evaluation in which NMPs scored slightly higher. This may be related to the distinct perceptions of the sample in this study, or may show some limitations with the workshop evaluation. Nevertheless, this paper provides further evidence that inter-professional education workshops based on prescribing medicines competently can prepare students to work collaboratively within a culture of safety (Hardisty et al, 2014; Paterson et al, 2014).

Any scale used to assess inter-professional learning needs to be verified to be suitable for use. The internal consistency of most domains on both questionnaires was good, but less so for the *Roles and Responsibilities* domain of the RIPLS questionnaire. This may be because although the initial RIPLS questionnaire was designed for use with undergraduate rather than postgraduate sample, in the current study it was administered to a combination of postgraduate and experienced clinicians (NMPs); whose experience may contrast with MPharm students with little clinical experience. This mismatch between study groups may have introduced some bias into the results. However, Reid et al (2006) validated the RIPLS for postgraduate students and hence the scope of its applicability may include student NMPs. An alternative view by Mahler et al (2015) cautioned that the RIPLS as an evaluative scale is problematic, and suggested there are different scales available that may be less prone to the reliability issues identified in the current analysis.

## **Conclusions**

The statistical analysis revealed the workshop to be evaluated well by participants on most domains in both instruments. However, the RIPLS instrument revealed participants to show some negative responses in the *Roles and Responsibilities* domain. The internal consistency of items of the internally-produced instrument was found to be good in all domains; all of which were also shown to be strongly associated with each other. No evidence was revealed that NMPs and MPharm students rated the workshop significantly differently from each other.

Further evaluations are planned and these findings will be used to further develop the internal workshop questionnaire. The effectiveness of the RIPLS instrument used by other participants with different backgrounds, such as experienced clinicians and undergraduate pharmacy students will also be investigated.

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