Reporting quality of survey research articles published in the *American Journal of Pharmaceutical Education*

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Background:

- In a review of pharmacy literature in 2004, survey research was the most common research method utilized and accounted for 25% of journal articles published in pharmacy literature.[1]
- In 2008, Draugalis and colleagues introduced Best Practices for Survey Research Reports published in the *American Journal of Pharmaceutical Education* (*AJPE*).[2]
- A review of survey research papers published in *AJPE* in 2005 and 2006 revealed deficiencies in information concerning reliability and/or validity, pre-testing of instruments, and adequate response rates.[2]
- Bennett and colleagues systematically reviewed published survey research reports from 34 general medical journals and found that only 35% of articles provided the survey instrument, less than 20% reported on validity or reliability of the instrument, and only 17% reported pre-testing of the survey instrument.[3]
- No literature exists systematically evaluating the reporting quality of survey research articles published in *AJPE* following the guidance published by Draugalis in 2008.

Objective:

To examine the reporting quality of survey research articles published in the *American Journal of Pharmaceutical Education* in 2016.

Methodology:

- A cross-sectional study of survey research articles published in *AJPE* from January 1, 2016 through December 31, 2016 that involved self-administered questionnaires was conducted.
- The title and abstract for each article published in *AJPE* in 2016 were reviewed to identify articles using survey research methodology by two investigators. Articles were excluded if the primary endpoint was evaluated by mixed methods, focus groups, semi-structured interviews, or interviews.
- A previously published, 35-item checklist developed by survey research methodology experts was modified by the investigators.[3]
- The checklist included items from *AJPE* Best Practices for Survey Research Reports, standards from the Enhancing the Quality and Transparency of Health Research (EQUATOR) Network, and the American Association for Public Opinion Research (AAPOR).[2,4-6]
- To pilot test the checklist, all investigators evaluated four pre-specified articles. Checklist items were modified or removed based on consensus.
- The final checklist included 30 items, each weighted as one point.
- Each article was evaluated by two independent investigators using the modified checklist.
- If two investigators were not able to meet consensus, a consultation with a third investigator was conducted.
- Data was analyzed using descriptive statistics.
- IRB approval was not granted as the study was deemed to not be human subjects research.

Methodology Overview:

Inclusion/Exclusion Determination

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Pilot checklist instrument

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Independent review of articles

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Compare results with second reviewer

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Discrepancy mediation with third reviewer (if needed)

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Full sample data analysis

Study Inclusion:

94 full text articles assessed for eligibility (*AJPE*)

48 articles excluded:
- 43 did not use survey methodology as primary analysis
- 2 used focus groups
- 2 used qualitative interviews
- 1 used semi-structured interviews

46 articles analyzed for reporting quality

Results:

Checklist Item	N (%) reported*
Design of Study Stated:	
Both Title and Abstract	1 (2%)
Either Title or Abstract^	44 (96%)
Not stated	1 (2%)
Background information provided in introduction	46 (100%)
Purpose/aim of paper explicitly stated in introduction	46 (100%)
Description of questionnaire provided:	
Full questionnaire provided	7 (15%)
At least one complete question provided^	25 (54%)
Questions not provided	14 (30%)
Type of research tool:	
New	41 (89%)
Existing	5 (11%)
For existing tools (n=5), psychometric properties provided	4 (80%)
For existing tools (n=5), referenced original work	5 (100%)
For new tools (n=41), pre-testing procedures reported	20 (49%)
For new tools (n=41), reliability/validity reported	
Both reliability and validity	7 (17%)
Reliability only^	5 (12%)
Validity only^	11 (27%)
Neither	18 (44%)
Mode of Administration	
Remote/Mail	0 (0%)
Remote/Internet	22 (48%)
Distributed in person	16 (35%)
Not stated	8 (17%)
Information on financial incentives provided	10 (22%)
Description of who approached potential participants	5 (11%)
Description of survey population and sample frame	
Both survey population and sample frame	46 (100%)

Checklist Item	N (%) reported*
Information on type and number of contacts provided	
Type and number	7 (15%)
Type only^	15 (33%)
No information	24 (52%)
Method of data analysis described	
Adequate	41 (89%)
Inadequate^	5 (11%)
No description	0 (0%)
Sample size calculation or justification provided	31 (67%)
Method for analysis of nonresponse error provided	0 (0%)
Method for calculating response rate provided	42 (91%)
Definition for complete vs. partial response provided	4 (9%)
Methods for handling missing data provided	6 (13%)
Response rate reported	45 (98%)
All respondents accounted for	31 (67%)
Information about how non-respondents differ from respondents provided	1 (2%)
Results clearly presented	
Yes, complete	44 (96%)
Yes, partial^	2 (4%)
Results address the objectives	45 (98%)
Results summarized referencing study objectives	46 (100%)
Strengths of the study stated	10 (22%)
Limitations of study stated	45 (98%)
Generalizability of results discussed	30 (65%)
Study funding reported	9 (20%)
IRB review reported	46 (100%)
Subject consent procedures reported	
Yes	6 (13%)
Reported waiver of consent	1 (2%)
Not stated	39 (85%)

*Percentages may not add to 100% due to rounding
^Choice scored as 0.5 points

	AJPE 2005-2006[2] (n=20)	*AJPE* 2016 (n=46)	Medical Literature[3] (n=117)
Pretesting of survey instrument reported	40%	49%*	18%^
Response Rate ≤ 60%	65%	9%**	n/a
Information concerning reliability/validity of survey instrument	50%	59%	29%
Type/number of contacts			
- Type and number	n/a	15%	52%
- Type only		33%	13%
- No information		52%	35%
Generalizability of results discussed	n/a	65%	40%

*New instruments (n=41)
**Articles reporting response rate(n=45)
^New instruments (n=111)
n/a: data not provided

Average Response Rate (range): 81.3% (39-100%)

Average Score ± SD (out of 30): 17.88 ± 1.98

Limitations:

- The checklist items have potential to be subjective.
- Results cannot be directly compared between *AJPE* issues or to Bennett's review of medical survey research.
- *AJPE* results may not be representative of all pharmacy survey research reporting quality.

Conclusions:

- The Best Practices for Survey Research Reports appears to hold pharmacy survey literature to a high standard, and overall, pharmacy survey research performed well on these specific best practices.
- Reporting of pretesting procedures and reliability, validity, and/or psychometric properties of the survey tool improved from Draugalis' review of articles published in 2005-2006.
- Although the results cannot be directly compared to Bennett's review of medical survey research, *AJPE* articles appeared to have a higher reporting quality.
- Areas for continued improvement in the reporting quality of survey research in the pharmacy literature include providing information on missing data, complete responses, and nonresponse bias.

Future Direction:

- Evaluate reporting quality of survey research articles published in several pharmacy journals.
- Determine factors that are correlated with better quality reporting in survey research such as type of author, journal of publication, or type of article.

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