

A Review of Hierarchy of Research Models Identifies a Distortion of Research Methods.

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Study Methodology

This was a qualitative meta-synthesis of select nursing research text books from 2001 to 2017 examining their discussions related to the Hierarchy of Research Evidence Models.

This was a purposeful review using the most popular authors in nursing research, and examining how some of these actually changed over time.

2017	2017	2015	2015	2014	2014	2013	2012	2009	2008	2006/ 2012	2006	2002	2002	2001	level	
Systematic Review and Meta-Analysis	Systematic Review,	Systematic Review or Meta-analysis or EBP guidelines	Systems	Meta-analysis of RCTs.	Systematic Review or Meta-analysis of RCTs.	Systematic Review of RCTs.	Multiple RCTs as meta-analysis, or systematic Reviews or meta-synthesis with Consistent interventions; RCTs with large sample or effect size	Systematic Review of RCTs.	Systematic Reviews of RCTs and Randomized trials	Systems	Decision Support System	Meta-analysis, or systematic reviews or RCTs; Three levels of bias	Meta-analysis, or systematic reviews of RCTs,	No hierarchies	1	
RCT, Experimental study	Single RCT	Experimental RCT	Summaries	Experimental RCT	Well designed RCT	Meta-analysis of RCTs & Quasi-exp.	RCTs or quasi-exp. Studies with consistent support for a spec. intervention	Single RCT	Single RCT, Single randomized trial	Summaries	Syntheses, Synopses, Summaries : Systematic reviews, Cochrane, Evidence based guidelines.	Systematic review of case control and cohort studies; Three levels of bias.	Single RCT			2
Quasi-Experimental	Single non-randomized or Quasi-exp.	Controlled Trials without randomization (Quasi-Exp. Name not used)	Synopses of Syntheses	Quasi-Exp, (not randomized, or no control group)	Quasi-Exp	Integrative reviews of RCTs & Quasi-exp.	Evidence from intact groups; Ex-post-facto and causal-comparative; Case-control or Cohort studies; Time-series with or without intervention; Single exp. Or quasi-exp. with high effect size.	Systematic review of Correlational or observational study	Systematic review of correlational and observational studies	Synopses	Single studies: (Medline, CINAHL, EMBASE, etc)	Nonanalytical studies (case reports or case series	Quasi-exp.			3
Descriptive Correlational, Predictive Correlational, Cohort studies	Single Prospective or Cohort study	Cohort studies or Case Control Studies	Syntheses	Well designed non-experimental design	Single, non-exp, Case-control, correlational, cohort study	Single RCT	Integrative reviews, systematic reviews of qualitative or descriptive, theory based evidence, expert opinion, peer reviewed prof. organization stds with supporting clinical evidence.	Single correlational or observational	Single correlational and observational study	Synthesis, Briggs Reviews, Cochrcane,		Expert opinion	Case Control study		4	

Mixed Method, Systematic Reviews, qualitative meta-synthesis	single Case-control study	Systematic Reviews of Descriptive or Qualitative studies	Synopses of single studies	Case report, clinical expertise, expert opinion	Systematic Reviews of Descriptive, Qualitative	Single Quasi-exp.	Systematic review of descriptive or qualitative studies	Systematic review of descriptive or qualitative or physiologic studies	Systematic review of descriptive or qualitative or physiologic studies	RCT Studies			Systematic review of descriptive or qualitative studies		5
Descriptive, qualitative,	single cross-sectional and Survey	Single Descriptive or Qualitative study	Single Studies		Single descriptive or qualitative	Meta-analysis of correlational studies	Single descriptive or qualitative study	Single descriptive, qualitative, or physiologic study	Single descriptive, qualitative, or physiologic study	Other types of Exp. Studies: Solomon, Multiple exp. Groups, crossover.			Single descriptive or qualitative study		6
Opinion, Expert Communities and Authorities	Single in-depth qualitative study	Expert Committee Reports or Expert Opinions			Opinion, Authorities, expert panel	integrative review of correlational or descriptive	Opinions of authorities, expert panel	Opinions of authorities, expert panel	Opinions of authorities, expert panel	Quasi-exp., time series,			Opinions of authorities, expert panel		7
						mixed methods & systematic review of quantitative, qualitative or mixed designs				Non-Exp. Designs, descriptive, Correlationa l					8
						Qualitative Meta-synthesis				Qualitative Systematic Reviews or meta synthesis					9
						Single Correlational				Single Qualitative study					10
						Single qualitative, descriptive				Expert Opinion, Case study, practice guidelines, program outcome data, narrative reviews					11

						Opinion of authorities with clinical evidence, reports, expert panel										1 2
2017: Gray, Grove & Sutherland	2017: Polit & Beck	2015: Schmidt, Brown	2015 Houser	2014: Boswell, Cannon	2014: LoBiondo -Wood, Haber	2013: Grove, Burns, Gray	2012: Houser	2009: Mateo, Kirchhoff	2008: Polit & Beck	2012: Schmidt, Brown (adopted from Haynes, 2006)	2006: Haynes	2002: New Zealand Group	2002: modified from Guyatt, Rennie by AMA.			
Authors & Year of Evidence																

Results

In 2001, 2002, nursing did not have Hierarchy Models. **Starting in 2004** most text books hinted at the idea there was a hierarchy or a linear progression of good research. Nursing integrated such models that continue today. Polit and Beck resisted until their 2008 publication and pushed back on this idea in their 2006 publication.

Models **vary from three to twelve levels**, with a host of variations in their middle range levels.

Results – cont.

Most authors place systematic reviews or meta-analysis of random controlled trials (RCTs) in the **top tier**.

Most models have identified case reports, clinical expertise, expert panel, or expert opinion in the **lowest tiers**.

Results – cont.

Qualitative studies have primarily been placed in the mid or **lower Tiers** of the models along with descriptive studies.

Hierarchy models do not include and **ignore** Action, Outcome, Intervention, Blended, Historical, and Big Data research methods.
(Only a couple exceptions were found)

Results – Outliers

Only one model included Blended studies (Grove, Burns, & Gray, 2013) but then eliminated this in later revisions.

Houser was the only one to place Qualitative meta-synthesis in a top tier in 2012.

Schmidt & Brown (2015) place *evidence-based practice guidelines* in a top tier and Houser (2015) and Schmidt & Brown (2012) placed *decision support systems* in the top tiers.

Review of DNP Research Methods from Two University Data Bases

TABLE 2: 2007-2014 DNP Studies

Type of Study	Number
Quantitative Research	
RCT	1
Correlational	2
Qualitative Research	
Literature Reviews	2
Perceptual studies	5
Experience Descriptive	53
Evaluation Descriptive	35
Combination Studies	
Intervention Outcome	17
TOTAL Studies	115

TABLE 3: Vanderbilt-2016 DNP Studies

Type of Study	Number
Quantitative Research	
RCT	0
Correlational	0
Qualitative Research	
Literature Reviews	0
Perceptual studies	5
Experience Descriptive	14
Evaluation Descriptive	15
Combination Studies	
Intervention Outcome	4
TOTAL Studies	38

Assessment

Prior to 2004, nursing research texts provided little opinion on more rigorous or less rigorous research methods, **but rather, matched the question to the correct research method and provided rigors for strengthening that particular method. Hierarchies were not present.**

There is almost no correlation between what is being studied by DNP students and the middle to upper tiers of the hierarchy models—If their methods are mentioned at all.

Assessment

The Hierarchy of Research Evidence Models are biased at best, and I believe they do not reflect how methods and research are to be judged. They distort research methodology and function.

Assessment

1. They ignore our most common EBP strategies being used in nursing
2. They suggest quantitative RCTs are the GOLD standard of research.
3. They ignore the greatest method on the horizon—Big Data—AND remember there is no control, or rigorous methods in Big Data. Only asking the right questions related to the data that already exists. Authors (Wang, 2013; Lohr, 2012) are already arguing RCTs will be replaced by BCTs. (Big-data Clinical Trials)
4. They ignore the basic requirement that a specific question can only be addressed by certain methods.

Summary

1. We need to rethink the value of Hierarchy of Research Evidence Models.
2. It is time to pull them from text books and explore how specific rigor for a give method and matching the question to the right method. are the focus of quality research.
3. We need to be ready for a quantum change in inquiry—knowing that our past thinking has also been flawed with BCT on the horizon.
4. We need to help those who were taught these models, to let them go.

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