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No longer hungry in hospital: Improving the hospital mealtime experience for older people through Action Research.

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Abstract

Aims and Objectives

This study aimed to improve the mealtime experience of older people in a hospital setting through helping staff to make changes to their clinical practice and the ward environment.

Background

Poor nutritional care has been a persistent and seemingly intractable problem for many years.

Methods

We used an action research design for the study, drawing on techniques from practice development to support the action phase of the work, including action learning, role modelling good practice and reflection. The ward context was explored at the beginning and end of the study using focus groups, interviews, observation and benchmarking.

Results

Ward staff made a number of changes to their nursing practice. The most significant was that all staff became engaged with, prioritised, and were involved in the mealtime, ensuring that there was sufficient time and expertise available to assist patients with eating.

Conclusions

This study demonstrates that it is possible to change nursing practice at mealtimes and that this change leads to improvements in patients' experience through ensuring they receive the help they need.

Relevance to Clinical Practice

Although hospital mealtimes are frequently viewed as problematic, we have shown that nurses can be enabled to make changes to their practice that have a positive impact on both the mealtime experience and wider patient care.

(Word count-215)

Keywords:

Older patients, nutrition, action research, qualitative approaches, action learning

Introduction:

Poor nutritional care and the high incidence of malnutrition in hospital patients have been recognised as major and persistant clinical problems for decades (e.g. Nightingale 1860 [reprinted 1969]; Lennard-Jones 1992; McWhirter and Pennington 1994). This problem has not only been noted by academics and clinicians, but is frequently highlighted by the media and patient organisations (Hinsliff 2005, Age Concern 2006). Older people are particularly vulnerable (Tierney 1996 and Green and Watson 2006).

Poor nutrition has consequences for the individual affected, such as increased mortality and morbidity, increased risk of infection and reduced quality of life. In addition, and of particular importance to policy makers, poor nutrition increases both length of hospital stay and chance of readmission (DH 2001a). There is evidence that much of this undernutrition is both preventable and treatable (Biernacki and Barratt 2001). However, despite knowledge of the prevalence of undernutrition in institutional settings being widely available, the problem remains (DH 2003; Palmer 1998). This paper will present an action research project which had a successful impact on mealtime care through making changes to nursing practice and the ward culture.

Why is there a problem?

A number of reasons have been proposed for the incidence and prevalence of undernutrition. These include the notion that nurses have become less actively involved with mealtimes in recent years. A number of reasons are proposed for this, including changes in meal delivery systems which remove nurses from the process of mealtimes and associated patient care (Carr and Mitchell 1991) and the demise of the hospital matron (DH 2003a). Others argue that poor hospital food and inflexible catering (Association of Community Health Councils 1997), and inadequate nutritional education of both nursing (Palmer 1998) and medical staff (Royal College

of Physicians 2002) contribute. Currently responsibilities around food, mealtimes and nutrition are complex and ill defined (Manthorpe and Watson 2003) with different tasks falling across and between both professional disciplines and departments (Leat 1998). Helping patients with eating is frequently delegated to less qualified staff, which further reinforces the idea that mealtime care is unskilled and unimportant. Nursing (and medical) work which interrupts patient meals, as well as taking nurses away from direct mealtime care (this includes drug administration which is frequently undertaken during patient meals), may also contribute to poor food intake (Deutekom et al 1991).

Potential solutions?

Eating is a complex activity with social, psychological as well as biological aspects. Many proposed solutions to poor hospital nutrition have focused on developing and using tools to identify those at risk of undernutrition (Closs 1993; Lehmann 1991). Specific interventions such as refeeding regimes and supplemental feeds (e.g. Woo et al 1994) have also been tried. Many initiatives to improve nutritional outcomes involve addressing single issues, for example, one study has shown that the introduction of nutritional assessment tools in isolation from other approaches was ineffective in changing practice at mealtimes (Jordan et al 2003). Therefore the problem of hospital mealtimes continues, with detrimental and sometimes devastating effects on patient wellbeing and physical outcomes (Watson 2006).

Poor nutritional care may also be a visible manifestation of the wider culture, within which patient care takes place. Any attempt to improve nutritional care has to take into account this complexity and to explore the cultural context within which nutritional care is provided.

The study

Making changes to clinical nursing practice has been found to be problematic to achieve and highly complex (Rycroft-Malone 2004; Copnell and Bruni 2006).

Acknowledgement of the complexity of clinical practice, as well as the recognition that changing practice is far from a straightforward and linear process, underpin the piece of work we describe in this paper. Here, we will outline a piece of work where we successfully worked with nursing staff to improve the quality of the mealtime nursing care offered to patients at mealtimes on a ward caring for older people.

Aims

The overarching aim of this study was to improve the nursing care that older people received at mealtimes.

Objectives

- To work with staff (using an action research approach) to help them to explore the current mealtime environment on the ward.
- To explore with staff, ways of focusing mealtimes towards the needs of patients.
- To help staff to make changes to the mealtime environment and their practice.

The clinical setting

The ward has 25 beds and cares for older people requiring complex nursing and medical care. Patients are referred to the ward from throughout the acute NHS Trust when the acute stage of the condition that led to hospital admission has been stabilised. Patients stay on the ward for between two weeks and several months.

Methods:

In this study the researcher (AD) collaborated with staff nurses from the ward (CW and LA). Staff nurses were the 'insiders' on the research team and understand the setting, practice and culture being studied. The researcher who was an 'outsider' brought expertise in theory and research. The problem of poor nutrition was identified in collaboration with the practitioners.

An action research approach was chosen to enable us to address the issues we had decided to work on, within the real world of practice. Action research is an approach developed by Kurt Lewin over 50 years ago (Lewin 1948), and operationalises a cyclical process of 'look, think and act' (Koch and Kralik 2001) in order to effect change. Action research has become a popular method of undertaking nursing research for a number of reasons, mainly due to the appeal of undertaking meaningful research in the context of practice which therefore has direct relevance to practitioners (Meyer 2000).

Four main features are central to an action research approach: collaboration between researcher and practitioner, identification and solution of practical problems, change in practice and development of theory (Holter and Schwartz-Barcott. 1993). However, there are also a number of typologies of action research (Meyer 2000). We aimed to work within an emancipatory framework, where there is collaboration between researcher and practitioners, and practitioners are enabled and supported to become practitioner researchers (Manley 2000).

Though action research was used in order to provide a framework for the data collection and the project overall, in order to facilitate the change or 'action' element of the study we felt we needed to use processes from practice development in order to guide nursing staff through this part of the study (McCormack et al 1999). Emancipatory action research and systematic practice development are thought to be complementary approaches to effecting change in clinical practice (Dewing and Traynor 2005). The elements from practice development we adopted included action

learning sets, facilitation of learning and critical companionship. These will be discussed later.

Ethics approval for the study was granted by the NHS Local Research Ethics Committee.

The study was undertaken in three phases, summarised in Figure 1:

Phase 1: Looking

The 'first stage in a quality action research study is to establish the basic values underpinning the care in a given area' (Nolan and Grant 1993, p 308). During this phase we explored the realities and context of mealtime care by:

- Observing mealtimes. This enabled us to see some of the issues which were having an impact on patient care at mealtimes.
- Collecting the perspectives of staff, patients and other visitors to the ward about mealtimes. Focus groups were held with staff, interviews with patients and a comments box was placed on the ward for patients, staff and visitors to record comments and ideas.

Observation

Six mealtimes were observed. All three mealtime events, i.e. breakfast, lunch and supper, were included in the observations. An observational schedule was designed which included the location of eating, involvement and activity of nursing staff and timing and duration mealtimes. Benchmarking of practice using Essence of Care (DH 2001/3) was undertaken using locally developed tools.

Focus groups

Focus groups with members of staff working on the ward captured the different perspectives and views about mealtimes and mealtime care (Kreuger 1994) as well as enabling us to 'tease out previously taken for granted assumptions' (Bloor *et al.*

2001:6). The groups included health care assistants, nutrition assistants, qualified nursing staff, occupational therapists and physiotherapists. Photographs illustrating mealtimes on the ward were shown to participants at the beginning of the focus group to stimulate discussion (Kitzinger and Barbour 1999). Discussion focused on various aspects of the observed mealtime experience. Three focus groups involving 19 staff were undertaken in phase 1 and 15 staff in phase 3.

Interviews

To explore patients' experiences and views of the ward mealtimes we used semi-structured interviews (Kvale. 1996). Interviews were based on a series of open-ended questions similar to the those used in the focus groups.

A purposive sample of six patients participated in *Phase 1* and four in *Phase 3*. Interviews were undertaken by the staff nurses.

Interviews and focus groups were tape-recorded and transcribed verbatim. Analysis of the data was qualitative, utilising interpretative inductive approaches. This involved immersion in the data, i.e. listening to interviews and focus groups and examining the observation schedules in order to gain a 'general sense' of the data. Line-by-line analysis was carried out by the project team independently through notation and sorting of the transcripts. Coding was then agreed through negotiation and discussion between the project team and coded using QSR N6 ® software for qualitative analysis. The data were organised conceptually into three main themes.

Data were fed back to ward staff and were used to focus the work of *Phase 2*.

Think and Act: Phase 2

This phase incorporated the 'thinking and action' phase of the project. We used action learning groups with staff, as well as role modelling of good practice and encouragement of 'reflection-on-action' (Schön 1983:50) through 'facilitation of learning' (this was undertaken by CW and LA).

Action learning:

Action learning is a process which involves learning and reflection, supported by colleagues and focuses on action (McGill and Beaty 2001). Reflection throughout the action research process has been described as a 'dynamic movement forward or backward' (Koch et al 2005, p 272). During this phase of the project the action learning groups operated during the shift handover period. Ground rules were negotiated in order to provide a safe space for conversations about practice, or 'reflections-for-practice', where solutions for practice issues were discussed, negotiated and actions agreed. Actions were revisited in subsequent action learning sets, and agreed, revised, or abandoned depending on their success. Staff were encouraged to reflect on why actions had worked or not.

Facilitation of learning

During Phase 2 of the project CW and LA worked alongside members of their teams in order to facilitate learning in the clinical setting (Binnie and Titchen 1999) by:

- Role modelling good practice,
- Encouraging 'reflection-on action' (Schön 1983, p 50),
- Encouraging personal development of staff.

Facilitation/ Critical companionship

Kitson et al (1998) argue that change is more likely to be successful when facilitated by both external and internal facilitators. Here, CW and LA were internal facilitators and AD was the external facilitator.

In order to make the planned changes achievable and to sustain motivation among the team, we planned to undertake the changes by utilising a series of smaller change cycles ('look, think, act') focusing on the areas of nursing practice and the eating environment (Titchen 2000).

Educational sessions were also implemented and continued throughout the project, these focused on topics such as nutrition assessment tools, eating equipment etc.

The project team documented the process of change through recording fieldnotes and reflective diaries.

Phase 3: Evaluation

This phase involved evaluation of the project, by repeating the data collection of Phase 1.

Findings

Phase 1

At the start of the action research cycle, mealtime care operated in a routinised and ritualistic way with little thought about the appropriateness or effectiveness of this style of practice. Mealtime care was provided mainly by unqualified staff while qualified nurses focused on tasks such as administering drugs and completing paperwork. Nurses were mostly unaware of their roles and responsibilities for the nutritional care of the patients, and patients were passive recipients of care.

Many of the nursing staff had been working on the ward for a number of years and had very little exposure to education, and some were very entrenched in their ways of practice.

Three themes were found to have an impact on patient experience of mealtimes, these were:

- nursing care and priorities,
- the eating environment,
- institutional and organisational constraints.

This paper will focus on the first theme: nursing care and priorities. Data within this theme describe the ward level processes which had an impact on the care provided to patients at mealtimes. Within this theme the data fall into three categories; mealtime care and its organisation, patient choice, and assessment and monitoring of the nutritional status and food intake of patients, each of which is discussed below.

Mealtime care and organisation

Qualified staff were often involved in other tasks during the mealtime, and therefore unavailable to provide care to patients, as illustrated by this comment from a healthcare assistant:

> Some people don't feel it's their job to help during dinner time, so I suppose if staff can prioritise their work that would help at lot. (FG2)

Lack of involvement of qualified nurses contributed to the low social and skill status associated with mealtime care on the ward.

Patients were aware of the limited number of staff available to provide help at mealtimes as well as the needs of other patients. The patient here describes how she would like to have help, but feels that this is not possible.

> Interviewer: So would you prefer to have help then at lunch?
>
> Patient 4: Well if it's available but if you haven't got it, you can't have it can you? When there's so many to look after…

A patient's relative commented on the lack of attention to patients' needs:

> Nice for patients to have meals at table in day room, although sometimes food is out of patients reach.
>
> (relative-comment box)

Patient choice

Breakfast on the ward comprises cereal and toast. Food for the mid-day and evening meals is provided through a cook-chill process, with the food being regenerated on the ward in a trolley. The food is plated and served by the nursing staff, which gives flexibility in terms of food choice and portion size at ward level.

Choice is a central feature of current government policy, and in particular is a feature of person-centred care as set out in the National Service Framework for Older People (DH 2001a). Stories demonstrating a lack of involvement in decision-making and failure to offer choice were offered by staff and patients. Here a member of staff reflects on the issue of choice and involvement, becoming aware of how she could improve this aspect of care.

> I think the choices are offered to them when they're been cared for but at the end of that session I don't think that we possibly go back and ask them 'Would you like us to take you to the dining area now that dinner is being served?' I think there are choices given to them as we care for them during the morning and that's something I'm realising myself as I talk about it really, that I don't personally go back, I don't think of going back and asking the patients 'Now its lunch time, would you like me to take you to the lounge?'. (FG 2)

Here we can see a patient concurring with this:

> Interviewer: Are you ever given the choice to go and eat in the dining room?
>
> Patient 2: No I've never been asked to go to the dining room.

Nutritional Assessment

There was no systematic nutritional screening or assessment of patients and more qualitative aspects such as food likes and dislikes were often neglected:

> Yeah, actually that is one factor that is really, really important. We have to really obtain their history, their food preferences, their eating preferences which sometimes we overlook don't we? (FG2)

Patients expected the nurses to know about their likes and dislikes. For example, the following patient assumes that the nurses know that she does not like shepherds pie as she never eats it, despite evidence to the contrary, i.e. she continues to be served this food item.

> Interviewer: So the shepherds' pie, do people know that you don't like shepherds pie?
>
> Patient 6: Well I think so because I don't eat it *(laughs).*
>
> Interviewer: Do you tell them that you don't like the shepherds' pie?
>
> Patient 6: Yeah.
>
> Interviewer: What do they do then? Do they take the shepherds' pie away from you?
>
> Patient 6: I won't make a scene... But I'm a person that won't make a fuss, I eat what I can and leave the rest.

Phase 2: Think/Act

Findings were presented to staff in a number of ways, including verbal and written presentations of the data. These prompted many discussions among the staff teams, and resulted in an eagerness to improve the situation. One person at the time commented about the usefulness of having an objective look at practice, 'as it's easy to just accept how things are'.

The staff chose to focus their action on two of the themes arising from the data collection; nursing care and priorities and the mealtime environment on the ward. This paper will focus on the former and briefly examine the contribution of both the

facilitation of learning and the action learning towards the 'think and act' aspects of the cycle.

Within this phase of work, creative ways to maximise the facilitation of learning were used, these varied from more traditional 'working alongside' colleagues, to assisting nurses to locate evidence for their practice from the library. Reflection in and on practice were central to all these approaches. The various approaches were selected in negotiation with team members who were encouraged to play an active part in the process.

The action learning sets were undertaken during the nursing shift overlap time, and took between 30 and 45 minutes. Although action learning sets traditionally operate as 'closed' groups with the membership unchanging, this was clearly not feasible in the ward setting due to variations in working hours, and the pressures and demands of the clinical environment. We therefore made a decision that these groups would be open to whichever staff were working and available on the day they had been organised. This proved mainly successful, with good attendance (between 5 and 8 people), though occasionally groups had to be abandoned if there was an overriding clinical emergency. Groups were held on average, once a week rotating between the two themes. A summary of the decisions agreed by the group were recorded and displayed on the ward so that all staff including those not present, could remain involved in developments. Ground rules were also displayed and reiterated at the start of each group. At the end of the project we asked staff for their views on the action learning groups. What appeared to be important was the involvement of everyone in the identification of issues, planning of solutions and the evaluation of the change:

> But we've made the decision haven't we, in the action learning group we've decided what we would do really, and discussed it, planned it haven't we and then we've done it? And then we've kind of evaluated what we've done,

haven't we, whether we like it or not…And we share that experience and we learn from that experience.

Phase 3: Evaluation

Major changes to mealtime care have been made. This is reflected in the language used to describe mealtimes now. Previously, mealtimes were described as chaotic and something to be avoided if at all possible! When staff were asked to describe mealtimes at the end of the project, the following is typical of the language used:

> Wonderful! *(Laughter)* It's amazing now actually, it's quite an enjoyable thing to… quite enjoyable now at mealtime because it's no longer considered as a task, which means that it is something that everybody's looking forward to, the staff and patients wise actually.
>
> FG 5.

Mealtime care and nursing priorities: Staff Involvement at mealtimes

The changes made to nursing practice have had a great impact on the mealtime experience of patients. One health care assistant initially found it difficult during the focus group to recall what things were like at the beginning of the project:

> I've suddenly remembered… I've had a flashback!...now I've remembered… you were running round like a maniac trying to get six hundred things done at the same time… and getting all stressed out by it as well.
>
> FG4.

Changes to nursing practice, have been achieved through positive re-engagement of all staff at mealtimes. Changing the time of the evening drug round meant that qualified nurses were available to assist in mealtime care. This change was the outcome of discussions during the action learning groups where the issue had been raised initially by health care assistants.

> More people are available to help patients. It's a priority. That's what everybody's doing now rather than writing notes and…the drug round and things like that that used to go on before.

Availability of help at mealtimes was also commented on by patients, whereas previously patients were very aware of the limited availability of help:

> At times where there's something I can't cut, a nurse will help you cut but if I can manage all right myself, I don't bother anybody.
>
> Pt9

And:

> Well I think it's nice to know that you're, I mean, absolutely waited on, I'm not used to being waited on so it's lovely to have it put in front of me.
>
> Pt7.

Patient choice

The conversations within the focus groups indicated that patients were now a focus of the work happening at mealtimes. Time is taken to find out what patients would like to eat, and creativity is evident in the care given to patients:

> I think patients have more choices for what they want… we will try out different things.
>
> FG4.

This was also commented on by the following patient:

> They try to give you something that you like.
>
> Pt 9

Assessment of nutritional status

Nutritional assessment and monitoring of the nutritional intake of patients is much more evident than at the beginning of the study. A broad approach to assessment is

clearly being undertaken by the nursing staff. The various activities now contributing to assessment and monitoring are summarised in Figure 2.

Formal assessment of nutritional risk

Initially, nurses were taught how to undertake measurements and calculations of body mass index (BMI), as previously, only weights were recorded. As standing height is frequently difficult to measure in the very frail patients on the ward, nurses were also taught to measure demispan, as a proxy for height. Later in the project, we decided to extend this measurement to a more formal screening for risk of malnutrition. The wider NHS Trust had decided to introduce the Malnutrition Universal Screening Tool (MUST) (BAPEN 2003), therefore this tool was selected to be used on the ward. Calculating unplanned weight loss is problematic because patients on the ward are often unable to express themselves and that information is not necessarily something relatives can provide. Currently assessment is undertaken by using a combination of BMI and qualitative means. The following indicates that more work on the formal assessment of nutritional risk, and possibly further training in the use of the MUST assessment tool is required:

> …No, the BMI I think was fine… but that MUST Assessment Tool I've found that very complicated. Too complicated to use in practice, that's my feeling that that hasn't really helped our assessment.
>
> FG6.

Knowing the patient

The importance of 'knowing the patient', emerged as a new aspect to assessment. For those patients with cognitive impairment, this involved discussing their care with family and friends. Sharing and reflecting on practice with colleagues was also important.

Here a health care assistant describes how she has found a way to work with one particular patient with dementia who had lost a lot of weight and was resistant to having help with eating. The following discussion occurred during the focus group, and illustrates how getting to know this patient had resulted in weight gain:

> HCA …I'm feeding her now and sometimes by holding her hand so she can't push it away and I actually fed her everything the other night. She was quite happy to hold my hand, she didn't push me away so I found that quite easy to be able to do it that way. It doesn't always work but…
>
> RN But she's put on a lot of weight as well…
>
> RN Three [kilograms] I think it was …
>
> HCA Well you just try different things, don't you? I mean if she spat it out then I wouldn't pursue feeding her but I found that if I held her hand if she wanted to squeeze it she could squeeze it but if I didn't hold her hand she would put it to her mouth and then she would start pushing away but she didn't, I wasn't force feeding her…but she took the food.
>
> FG6

This willingness to take time to provide what is needed for individual patients is reflected in the following patient's comment:

> I've had a bad mouth …and it's made my mouth very sore inside so I have to keep asking them for something soft and every day they try to get me something soft … very pleased with that. That they were still looking after me so well.
>
> Patient 9

The importance of spending time with the patient and having the patience demonstrates a major shift in care, away from the rush of mealtimes towards a focus on the needs of the individual:

> And there's also about the duration of feeding … if you sit and be patient and have the time to do it, then that person will actually eat.
>
> FG4.

The involvement of all staff in mealtimes means that there is more time to spend with each person, which enables staff to 'get to know the person'.

Working with patients' families

The importance of working with patients' families, learning strategies from them and communicating these to the rest of the team was also discussed.

> I think a lot of that came actually from the family, their suggestions as to what she would eat and the way they'd do it. I observed that and I found it actually works because they get the drink and they say "come on, that's lovely, that's lovely" and, you know, and when you try and do that, how her son does it, she'll take the whole drink…
>
> FG6

Observation and communication of nutritional intake.

Staff agree that the major change leading to the current improvements in this aspect of clinical care is through them prioritising nutritional care and being actively involved in mealtimes. This means that they are in a position to observe and monitor what patients are eating, and any difficulties they are experiencing:

> It's a priority now, I think isn't it? Seeing what people eat, it's like one of the most important, … I don't think I recognised how important it is that the eating thing, because everything else kind of goes from that, doesn't it. FG6

Teamwork and reflecting together

During the project, we observed that giving staff formal opportunities to discuss practice issues in a safe, open and honest way, has also had a positive effect on building a strong team.

> …during the handover we discuss about, you know, about how we have to respond to certain patients. FG4.

Conclusions

Through this study we have made a number of positive changes to both nursing practice and the mealtime environment which are having an impact on both patient and staff experience of mealtimes. For staff, mealtimes are no longer perceived to be a chore or task which is to be delegated or avoided if at all possible. Staff are actively and positively engaged in mealtime work. For patients, there is time to enjoy the food they are served. There are people available to help them to eat when they need assistance. Food is carefully presented, in an appetising way, in order to maximise enjoyment.

We are unaware of other studies which have addressed mealtime care in this way in hospital settings. Hickson et al (2004) introduced health care assistants who were supernumerary and had been trained to assist with feeding into the hospital setting. However, this intervention failed to have any impact on nutritional status or length of hospital stay for patients. They concluded that improving nutritional care is 'not as simple as employing more staff' (p. 77). Approaches of this type are also unlikely to be feasible in the current economic climate and are unlikely to re-engage nurses with the complexities of mealtime care. The advantage of working with nursing staff within the clinical setting is that nutritional care has become integrated into daily practice rather than being someone else's responsibility.

The use of ‘look, think and act’ cycles were an effective way to address the complex and varied issues which are enacted during mealtime care, as they are readily ‘interpreted by research participants in their everyday lives’ (Koch et al 2005, p 276).

This work contributes to the knowledge-base emerging around the use of practice-development techniques to improve patient care. This approach takes time and commitment from the team involved, however, we feel that this investment is worth making. Phase 2 of this work took place over a period of approximately 18 months.

This project was undertaken in one clinical area, and focused on addressing a specific context, therefore care should be taken when extrapolating these findings to other settings. However, the problem of poor nutrition in hospitals is widespread, and many elements of the context may be seen in other settings. We hope that other practitioners will be encouraged by the work we have undertaken to try to address poor nutrition and associated practice in their own clinical areas.

Further research on the sustainability of this type of work will be valuable, Koch et al (2005, p 276) argue that when the action research cycle is ‘internalised as a modus operandi, it can be sustained throughout one’s life as a strategy’. Since the evaluation in Phase 3, ward staff have continued to use the ‘look, think, act cycle’ to develop their practice.

Overall, this study has demonstrated that it is possible to change nursing practice at mealtimes and that patients eat when nurses see mealtimes as important.

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Contributions

Study design and funding applications: AD

Data collection and analysis: AD, CW, LA

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Figures:

Figure 1: Summary of methods used to facilitate changes in mealtime care.

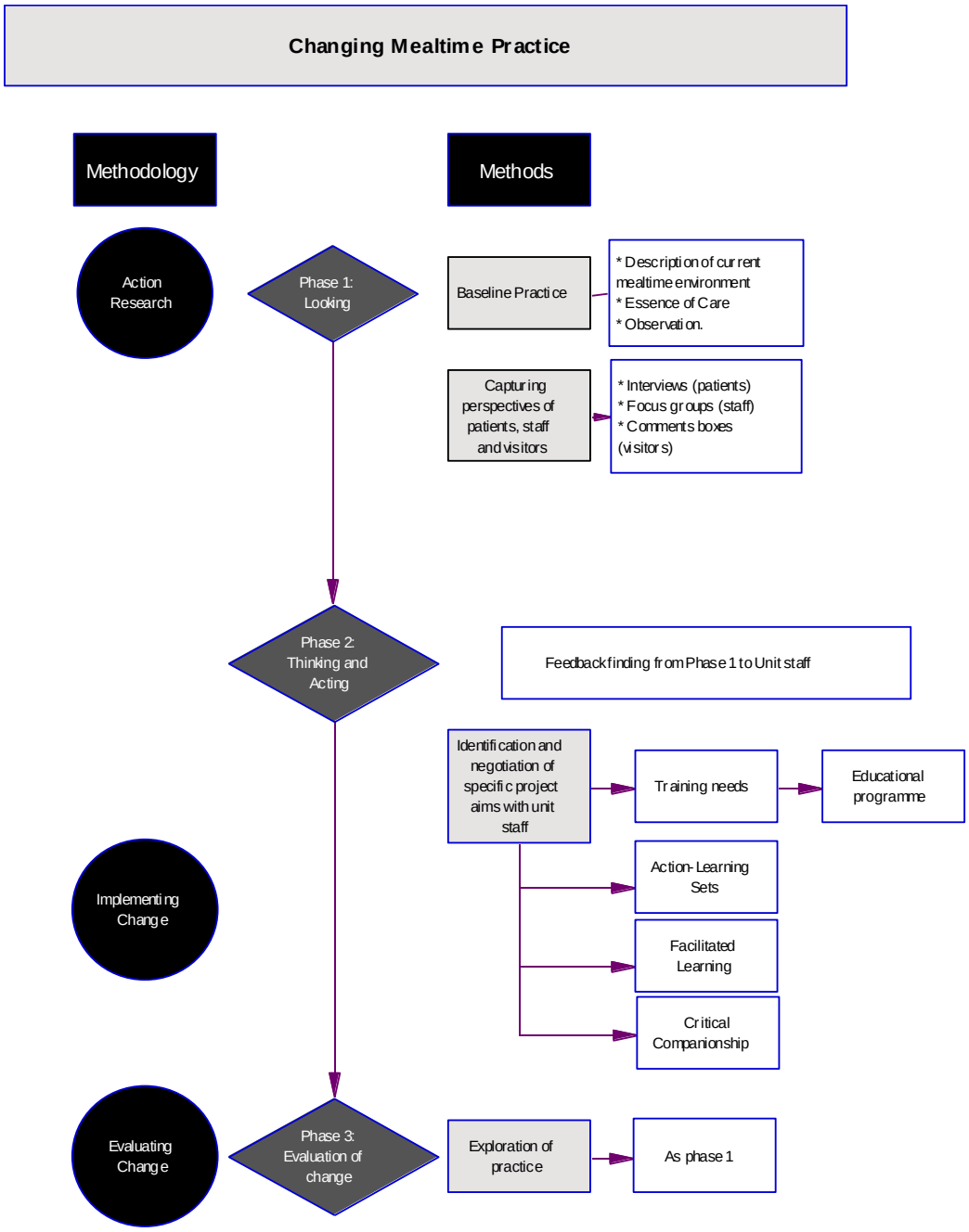

Figure 2: Contributions to assessment and monitoring of the nutritional intake and nutritional status of patients: