

# EVALUATION OF NUTRITIONAL SUPPORT & IN-HOSPITAL MORTALITY IN PATIENTS WITH MALNUTRITION

**Featuring:**

**Nina Kaegi-Braun, MD**

## TRANSCRIPT

**Maura Bowen:** As its name suggests, malnutrition is a lack of proper nutrition. It's the result of not having enough to eat or not eating enough of the right things or being unable to use the food available to you. It's a critical issue around the world. In fact, the world health organization reports that one third of the global population suffers from malnutrition complications like stunting or wasting or obesity or a vitamin and mineral deficiency and some noncommunicable diseases. When you're critically ill and in the hospital, malnutrition makes it harder to get well and stay healthy. So with this in mind, nutrition, intervention plays an increasingly important role in how we improve patient outcomes. An increasing number of hospitals are putting strategies in place to help standardize nutrition screening practices and manage patients with malnutrition.

I'm Maura Bowen with Abbott Nutrition Health Institute's power of nutrition podcast, and Dr. Nina Kaegi-Braun is with me today to share the results of a cohort study she and her colleagues conducted to evaluate nutritional support and in-hospital mortality in patients with malnutrition in Switzerland. The results of this study were published in the January 2021 edition of the Journal of the American Medical Association or JAMA. Dr. Kaegi-Braun, thank you for joining me today.

**Dr. Kaegi-Braun:** Thank you very much for the invitation Maura and hi to everyone who's listening. I'm happy to be here and I'm looking forward to talk about the challenge of malnutrition in our hospitals.

**Maura Bowen:** Great. First, I should note that since we're still in the middle of a pandemic, Dr. Kaegi-Braun and I are both dialing in from the comfort of our offices rather than recording together in the studio. So today's recording may sound a little different from what you're used to hearing. And then secondly, Dr. Kaegi-

Braun, this is my chance to properly introduce you. Would you mind telling us a little bit about yourself and your background and how you came to focus your career on nutrition?

**Dr. Kaegi-Braun:** Sure. Currently I'm working as a resident in a tertiary care hospital in Switzerland, in the Department of Endocrinology, Diabetology and Metabolism. I started my clinical career in internal medicine. I've spent quite a lot of time on general medical wards treating patients which were often polymorbid and frail, but I have to be honest with you at the beginning, I did not spend many thoughts on the nutritional status of my patients. It was during my time of my doctoral thesis, when I got familiar with the literature about this topic, and I was very surprised about the high prevalence and the large consequences of malnutrition in acute ill hospitalized patients.

I mean, according to the literature, 30% of my patients at that time were malnourished and the interesting thing is that acute illness is not only putting the patients at risk for malnutrition, but it's also the other way around. Malnourished status of the patients also influences the prognosis of the disease. This was the time when I really started to get interested in this topic, and I was realizing that earlier I had this kind of bad gut feeling when I was treating these malnourished patients, but I really did not think it to the end. I mean, that nutritional support might improve their prognosis.

**Maura Bowen:** Thank you for sharing your background with us. Let's start by talking about the body of science on the correlation between in-hospital malnutrition and poor patient outcomes. What can you tell us about this relationship?

**Dr. Kaegi-Braun:** From formal observational studies, we know this relationship quite well. In hospital patients which were systematically screened and identified as at nutritional risk are shown to have poorer outcomes independent of the underlying disease. For example, one study showed that the 30-day mortality risk for malnourished patients was almost eight times higher compared to patients with normal nutritional status. It was not only mortality, but also functional activity and quality of life which occurs in malnourished patients. Last but not least, length-of-hospital-stay and readmission rates were increased too, which is not only important for the patient, but also for general health policy.

**Maura Bowen:** Can you share how your cohort study came about what prompted you and your colleagues to take on this discovery?

**Dr. Kaegi-Braun:** Actually, it was the current research progress in this field. Recent large randomized controlled clinical trials, such as the EFFORT and the NOURISH trial provided evidence for the effectiveness of nutritional support in malnourished medical inpatients. A 2019 published meta-analysis also showed benefits in regards to mortality and readmission rates. Consequently, the awareness of malnutrition notably

increased. The hospitals started to implement malnutrition screening tools and the diagnosis of malnutrition also became financially relevant by influencing case-based reimbursed income.

**Maura Bowen:** Can you tell us about the objective or the aim of your study?

**Dr. Kaegi-Braun:** In the context of this increasing awareness and changes in clinical routine, our aim was to use a large Swiss claims database to investigate whether the administration of nutritional support as prescribed in clinical routine was associated with improved in-hospital survival.

**Maura Bowen:** What were your team's findings?

**Dr. Kaegi-Braun:** If I had to simplify our findings and summarize them in one sentence, I would say it's similar to the existing clinical trials in our large population-based cohort study, we found nutritional support to be associated with a reduced mortality rate. It's quite impressive how similar the results were. While the already-mentioned meta-analysis showed a relative risk reduction for all-cause mortality of 27%, in our cohort we excluded the patients with enteral and parental nutrition, resulting in a 25% relative-risk reduction for in-hospital mortality.

But I think I have to go a little bit more into details of the study's design. We used this claims database which gave us an almost complete sample of hospitalization and on medical wards in Switzerland. We then reduced the initial population of more than 8 million hospitalizations by only including the ones with the ICD-10 code for malnutrition. This is how we ended up with approximately 114,000 patients. We divided them into two groups based on the fact, if nutritional treatment was documented as an intervention code. Finally we ended up with two groups: a nutritional support group and the control group. The problem of this study design was it was retrospective and not randomized, so our two groups were not comparable. That is why we needed to use a statistical method called propensity score matching to make the groups as similar as possible. With this method, you search for every patient in the nutritional-intervention group, a patient from the control group, which have very similar characteristics.

After this process, we still had about 70,000 hospitalizations to investigate. In this investigation, we found in-hospital mortality rate of 8.8% in the control group, 7.2% in the nutritional-support group, which leads to an incident-risk ratio of 0.79, which was a statistically significant difference. We also found nutritional support to be associated with reduction in readmission rates and lower rates of post-acute care facility use.

**Maura Bowen:** Those are incredible findings. I'm wondering if you were surprised by anything.

**Dr. Kaegi-Braun:** Well, yes, actually I was surprised by more than one finding. Let me start with the massive under-diagnosis of malnutrition. From the almost 1.9 million hospitalizations on medical ward, only 110,000

patients were identified as malnourished, according to the ICD-10 codes. It is only 6% of all the hospitalizations, but we know from clinical trials that the prevalence is about 30% in Switzerland. This means that not even one-third of the suspected malnutrition cases ended up with having an ICD-10 code and even more surprising was the fact that from all patients with a code for malnutrition, one third was not prescribed any nutritional therapy.

**Dr. Kaegi-Braun:** Thus, we are dealing not only with a massive under-diagnosis, but also with an under-treatment of the condition of malnutrition. Another finding of high interest was that we were also able to show other positive associations of nutritional support and clinical outcomes, namely less re-hospitalizations and less institutionalization after discharge. Results from former studies were heterogenous for these new end points, thus they seem to be important in regards to increasing health care costs. Finally, it was also surprising that in our subgroup analysis, the association of nutritional support and reduced mortality rate was robust in several different subgroups, including different main diagnosis co-morbidities and also different grades of severity of malnutrition. However, the association was more pronounced in less-frail patients and in patients with shorter length of hospital stay. Maybe this is connected with the findings from our ICU trial which showed unfavorable effects of nutritional support in critically ill patients.

**Maura Bowen:** That is really fascinating. I wanted to ask for conclusions you've drawn from these results.

**Dr. Kaegi-Braun:** Our data led me to the conclusion that the beneficial effects of nutrition support, which had been shown under the well-structured conditions of clinical trials are also detectable when we investigate the real-world situation from the malnutrition management, as we use it in daily routine in our hospitals. We have to be aware of a retrospective design of the study comes with several limitations, especially the risk of confounding. As with this statistical model, we accounted for a lot of measurable confounding variables, including factors of general health and so increased internal validity of the data. By investigating an unselected nationwide population, we also maximize external validity, which makes our findings more generalizable.

**Dr. Kaegi-Braun:** I think our data underlines the importance of the already-recommended standardized nutritional screening and therapy and helps to increase the evidence level for the current guidelines. Maybe they also help to inform patients, clinicians, or authorities about the usefulness of nutritional support.

**Maura Bowen:** Your study makes me think of a podcast episode we recorded last year with professor Phillip Schutz, who spoke to us about [the EFFORT trial and evidence-based medical nutrition](#). In fact, I think I'll link to that recording and the transcript for our discussion today in case any of our listeners would like to hear what professor Schutz had to say. But here's my question for you. In your opinion, how does your data work in conjunction with other recent trials, like the EFFORT trial and the NOURISH trial to add to the body of evidence supporting nutrition intervention in the hospital setting?

**Dr. Kaegi-Braun:** I think that we have to see our data as additions to the already-existing data from the clinical trials and with our analysis, we were able to prove the concept of a beneficial effect of nutritional support in real life situation and after implementing the nutritional screening and management in Switzerland.

**Maura Bowen:** In your mind, in what ways do you think clinicians can take this information and apply it to practice?

**Dr. Kaegi-Braun:** I think the most important thing is that we recognize malnutrition, and we know that there are treatment options. Physicians should be aware of their role in the diagnosis and prescription of treatment against malnutrition. And I think at least in my experience, that's not always the case.

**Maura Bowen:** All right. And last question. What sorts of studies would you like to see conducted to compliment your research?

**Dr. Kaegi-Braun:** One interesting topic is the personalization of nutritional therapy. We found less-frail patients and patients with shorter length of hospital stay, who have pronounced mortality benefits. It's interesting to further investigate if there are predictive factors for the success of nutritional support so that we can further personalize it. Another important topic is the long-term question from follow-up data of the EFFORT trial, we know that there is a significant reduction of short-term mortality, but no effect on longer-term outcomes. This raises the question, whether continuation of nutritional support after discharge can further improve outcomes. We are currently planning a trial on the basis of this question.

**Maura Bowen:** Well, Dr. Kaegi-Braun, thank you so much for your time today and for helping us to build awareness for the importance of nutrition intervention for hospitalized patient outcomes. We are so grateful you were able to share your insights with us today. Thank you for being here.

**Dr. Kaegi-Braun:** Thank you, Maura. It was a pleasure to be here and thank you for having me.

**Maura Bowen:** Absolutely. For our listeners. If you're looking for more podcasts, we have dozens and dozens across a variety of different nutrition science topics, and you can find them on ANHI.org by clicking RESOURCES at the top of the page, then PODCASTS & VIDEOS. We're also on Spotify now, so be sure to subscribe and tell your colleagues about our series. We release new episodes nearly every week.

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