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Undergraduate

INTERVIEW WITH SHARON FLEMING

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Dr. Sharon Fleming has been a professor in the Department of Nutritional Science & Toxicology at UC Berkeley since 1979. After getting her PhD in Food Science and Nutrition from the University of Saskatchewan, Saskatoon in 1975, her research has followed her interests from cellular and molecular pathways of macronutrients to public health in low-income inner-city communities. Professor Fleming was a co-founder of the Robert C and Veronica Atkins Center for Weight and Health and has also been very involved in assessing risk factors for type II diabetes. Her symposium in 2002 on type II diabetes in children comprehensively reviewed these various risk factors for use in public policy. BSJ interviewed Dr. Fleming just as she was clearing out her office in preparation for retiring from teaching and research at Berkeley to become a professor emeritus.

BSJ: The first thing we wanted to talk about was your research. Can you describe what your general research interests have been?

SF: My most recent research interest has been on developing and evaluating community based

interventions that can reduce risk of obesity-associated disease in children.

BSJ: A lot of your papers focus on the low-income populations, specifically, inner-city low-income populations. Was there any personal drive to focus on that, or was it simply where the statistics were leading you to focus?

SF: Primarily, of course, it needs to be research driven. A research question always comes out of literature and data that is already available, and we've known for a long time that there's a relationship where individuals living in lower socio-economic communities are at higher risk of obesity than, specifically, upper-class individuals. So, if you want to reduce the risk of disease associated with obesity, you want to work in the populations where the risks of being obese in the first place are the highest, and that is lower-income socio-economic areas. Now, another main factor has to do with ethnicity and potentially genetics. We knew before I started this work that, in America at least, Hispanic children and African-American children and adults are more at risk for obesity and obesity related



If you want to reduce the risk of disease associated with obesity, you want to work in the populations where the risks of being obese in the first place are the highest, and that is lower-income socio-economic areas.

BSJ
diseases than their white peers, for example. So that led me to African-American inner-city families and children, because there are at least two reasons why they are at risk. One is that they are living in lower socio-economic conditions, and they are also of an ethnicity and potential gene pool that puts them at risk.

BSJ: I saw that you are part of an organization called AS-TAT [After School Taking Action Together project – aimed at improving the health and prospects of obese, inner-city African-American and Hispanic youth].

SF: It's going to be a very, very expensive study, and we were not able to get an adequate amount of funding to start that project. So it has never been completed.

BSJ: The other work we saw involved type II diabetes and analyzing its risk factors. You've laid a lot of the groundwork for how we perceive type II diabetes and how clinicians should take action against it. How have doctors taken up those risk factors? Have they really been put into practice, in terms of trying to prevent type II diabetes? Or has that work largely been there for us to know about, but hasn't really been put into practice?

SF: Physicians, for the most part, are not charged with preventing. Physicians, for the most part, are charged with treating. So, I don't think putting the onus of prevention on the physicians is the right place. If you look at healthcare funding, there isn't a great proportion of healthcare funding that goes to prevention. For the most part, it goes to treatment.

BSJ: A lot of the onus for prevention goes toward organizations like the Prevention Institute in Oakland, and others like that. Do they frequently draw on research like this? What kind of efforts have you seen to prevent

type II diabetes put into play, following your research?

SF: I think it would be foolhardy to think that the results of any one study are enough to cause a gigantic change to happen anywhere. So it's really the totality of evidence that gets used to change policy. The way I think it would be more accurate to look at is: "have the results of studies such as ours, when put together with research of others as well, been used in any way?" And I would say the answer is "Yes," but again I need to emphasize: it's not just my study, not just one study. That's not nearly adequate enough. There's a lot of interest in the community, in trying to improve health, but there are so many pressures on resources. So, if you look at, for example, schools. Of course, schools want a cafeteria that's healthy, and I think there is probably no school that doesn't. Who wouldn't? But where is the money going to come from? For the most part, in the low-income communities, the school's lunch program pays for a lot of the food that is there and the supplemental breakfast programs. Some the children get a lot of their daily calories from the USDA-funded breakfast, lunch, and now, afterschool snack, especially in the state of California.

Well, there's only so much money to pay for those meals. I think, everyone is interested in making them as healthy as possible, but that has to be done within the budget. And certainly I would say there's been a lot of interest. There's been a lot of action taken to try to do that, but money is a real issue. The same is true with physical activity. I think there is probably no school that doesn't recognize the importance of physical activity, but when you put that together with the academic pressures there are on the school day, with the performance standards now and the testing performance now, the principles and the teacher and the school boards, if they want to stay in business, are having to meet those standards or having to improve their capability to meet those standards. Sometimes that means there won't be physical activity because that's not where the school day is going to get allocated, nor is it where the limited funds are going to get allocated. I think

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what we've got is a lot of competing interests. I wouldn't say there is anybody who means harm. Everybody means good, but which is the greater good?

BSJ: There have been a lot of movements nowadays trying to get healthier food into schools. An example is Michelle Obama's movement to get healthier food and there's also Alice Water's Chez Panisse Foundation. What's your take on the foundations? Do you think they are effective or do you think they are just too noble?

SF: I think that there is no effort that will get wasted. I think all of those efforts are undoubtedly going to have some improvements. Now, I have to say I am kind of focused on some of the results we got from the observations we made. Some the observations that we have suggest to me that there may well need to be a more personally-targeted approach that complements other resource efforts. So, for example, we could take the children and we could either bring them to a gymnasium or have them come to a gymnasium and we could say, "it's yours, play." They wouldn't. Okay, let's give you these resources. Here is a basketball, here is some skipping rope, and you know, an obstacle course. What we had to do was to introduce a large amount of structure in order to get the children engaged in being physically active. We really had to work almost one-on-one to get them started, to get them going. We had to make a very safe environment, one where the children who weren't normally physically active weren't embarrassed by trying. So you put that together with a campaign that really does not have a pursuit and it is hard for me to see how many of the children most in need are going to have the internal resources to be able to take advantage of, I'm going to call it, perhaps, new opportunity.

So that is where I was. What we found as well is that there was a very close correlation – there is a very strong association – between the psycho-behavioral condition of the child as the child perceives his or her own psycho-behavioral status and metabolic health. Now by psycho-behavioral, what I am talking about is the extent to which the child believes she or he can control his or her anger, feel depressed, hyperactive, be able to hold attention or have attention problems, have functional communication, be able to participate in activities of daily living. All a whole broad range, including anxiety – a whole broad range of psychological states and behavioral states, which is why we call it psycho-behavioral. The children that felt they were the worst off, let's say, had the least favorable psycho-behavioral status also were the most insulin-resistant kids. Okay. It was not associated with obesity, it was the metabolic state. Now when you think about children, or even if you think about adults, we know that

there are some obese individuals, no matter what their age, who are absolutely perfectly healthy. They have no metabolic risk factors whatsoever. There are others who may have the same level of obesity who have a lot of serious metabolic risk factors. We know as well that individuals will vary in their sensitivity to metabolic risk as they increase obesity. Some will start to get risk factors without being very obese at all and it will keep getting worse. Others, you won't see risk factors until they get quite obese. Of course others, not at all, and we were only working with overweight and obese children. We weren't working with any children that had what you would think of as the normal weight for height.

What we were able to do was to show that this association between their psycho-behavioral condition and their insulin resistance was independent of body fatness. That relationship was not at all due to body fatness. It was all due to insulin resistance. Now, quite frankly, the big reason that we are so concerned as a nation, as a world, about obese kids is because of disease. I mean obesity itself isn't really a disease – it's the associations that you have with diabetes, heart disease, hypertension, cancers, etc. Those are the things that we worry about. So here we have this association. So now then, why do we care about obesity – because of disease. Now we see disease

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associated with psycho-behavioral condition. Now, when we looked at other things, like body satisfaction and self-efficacy with respect to making behavioral change, what we found is that this psycho-behavioral condition is a real barrier to making change. So now, here you have children with a less favorable psycho-behavioral condition, exactly those that mostly need intervention. Now, if I think about myself, if I am feeling really stressed or if I am feeling depressed, or I am feeling extremely anxious, it is a lot harder for me to get myself to change behaviors. You can say to me, "well, go exercise, just go to the gym twice a week." Are you kidding, I can't take on one more thing,

right? Okay, so that is the situation with the guy here. The kids then who are most in need of increasing their physical activity to improve their health, to make dietary changes are the ones that have the least favorable psycho-behavioral condition. In other words, they have barriers that are within themselves. Internal factors that are going to be working against their ability to take advantage of, perhaps, guidance, advise, lecturing, and advertisements.

That is why I am saying that it is hard for me to see how just large-scale changes are going to be able to effectively intervene. Now, if you can make those changes and prevent the obesity in the two month old or in the newly born, then you can continue to prevent it. It is hard for me to see how those efforts alone are going to prevent it either. To do that, you are going to have to intervene in the adolescent girls, who are in the process of becoming mothers. Pregnant women who are overweight are much more likely to have babies that are overweight. If not born overweight, the baby is going to even still have an increased risk of type II diabetes during his or her lifetime. So, you got to intervene somewhere. I'm just not sure, now that we have got so many overweight individuals. It is not clear to me how we are going to start that intervention without there being a combination of approaches, at least some of them targeted at the individual level.

BSJ: Do you think that the government should be taking steps to encourage people to make better choices through means such as the proposed "fat tax" or "soda tax," or should they be trying to take a different approach?

SF: I'm not an expert in food economics, so I'm going to defer on that. My non-expert opinion is that we should leave no stone unturned. If increasing cigarette taxes has been shown to be partly responsible for reducing smoking, then we should try taxing soda and sugar. There are at least some folks who do not believe it was effective as social pressures, like not being able to smoke in the office, then having to smoke outside the building, then having to smoke 10 feet away from the building, then 25 feet from the building, then 100 feet. Those people believe that those were factors that were more effective at reducing smoking than taxes. Now, if you were to tax sugar and fats, then you have to look at who would be paying the tax? Well, then you have to look at who consumes the sodas, and in fact we've got a very high intake of those types of foods in the low income communities, so then you would be effectively be taxing those who can least afford to pay the tax.

BSJ: But those are the same people who are most at risk and have a higher likelihood of developing these types of diseases. Do you to tax them or try to encourage them to

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step away from it and deal with the fact that this is not the most equitable thing but it is good for society?

SF: I think there isn't any player in society who shouldn't play a role. The government absolutely should, the food industry definitely should. I think in this country we have placed the onus squarely at the foot of the individual to make the choice. So if an individual chooses to drink a 20 or a 40 or a 60oz soda then that's their choice – therefore they should suffer the consequence. I'm not so sure that we are socially responsible as industries by even marketing those types of things, by allowing those kinds of single serving products to be marketed. I find it very difficult to justify.

BSJ: Do you study or track certain individuals and follow their development?

SF: No, the longest intervention that we've done is two years. So yes, we followed them for two years but not beyond two years.

BSJ: One thing we wanted to know more about is the Robert and Veronica Atkins Center that that you helped to cofound. Can you tell us what that's about and what kind of work it's been doing over the years?

SF: The center started as a center for hunger and obesity. We began it that way because we viewed those two areas as not getting adequate attention, we felt, by the nutrition community. We also viewed them as being very multidisciplinary and very related areas. Again if you look at low-income communities, you have the highest incidence of hunger of anywhere in the country and the highest incidence of obesity in the community. If you look at the individual level, you have individuals who are hungry for part of the month who are also obese. You see that particularly in females. So, you see it within communities and you see it in individuals. Some of the first observations of that relationship within individuals were made in Mississippi, in communities where there

was a lot of food assistance given. At that time, there were a lot of questions being asked as to whether or not the government should be providing food assistance, when indeed individuals were obese. Wasn't that suggesting that, in fact, the individuals were getting too much food, not too little food? That was one of the reasons that we saw obesity as being related at the community level and the individual level. As well, we were very interested in the hunger that is associated with eating disorders, such as bulimia and anorexia. So, it was that whole group of areas that we were very interested in trying to provide some nexus to, to be able to bring researchers and community members together – maybe use that to try to get more academic expertise around the areas and also funding.

As it evolved, we decided to change the focus. We didn't view Berkeley as probably ever having much expertise in the eating disorders and so we renamed the center as "The Center for Weight and Health." This also put a more positive spin on it. Hunger was viewed as being a very negative and so was obesity, and so it's called the Center for Weight and Health. And then some years later, the Atkins foundation that they would like to provide support to it in the long term and that is the death of Mrs. Atkins then there would be funding in the form of an endowment to be able to provide ongoing funding for the center. So that has been an evolution. So what does that do? It's really focusing on all types of research – primarily community based – and a lot of environmental-level research done around in those areas of obesity primarily prevention.

BSJ: Does the center provide grants?

SF: No, no grants. It gets grants.

BSJ: So, since you're leaving Cal, will you still be involved with the Atkins Center?

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SF: No, I will be an emeritus professor and I won't be continuing my research probably.

BSJ: So does that mean you will no longer be lecturing?

SF: No, I will be an emeritus so I will not be lecturing. I'll be continuing to write for the next couple of years, but not doing new projects.

BSJ: Maybe nationally, comparing the inner city Oakland, with say, inner city NY or Chicago, do you see any differences?

SF: Well of course there are differences, but I focus on the similarities. Those are that we are still dealing with areas that primarily support individuals that are of high-risk ethnicities, high risk of disease, in low-income communities. They tend to have risk factors, not just for obesity, but also for a whole other range of difficult educational situations. Of course, high crime, and not much in the way of physical activity venues. Not much in the way of supermarkets and healthy foods and lots and lots of challenges; so there are so many similarities. Those are the things I tend to focus on. In my view, if we can effectively intervene in inner city Oakland, we can probably translate those findings into inner city America. Of course, it all has to be tweaked because no two communities are the same, but at least it can give you a framework for proceeding.

BSJ: And in your career have you seen a Cinderella story where everything turned out right? You come across a community and somehow they pull together and are able to overcome something.

SF: Ah, well, you know, there are. Certainly there are always triumphs in the community, there are always triumphs. In the face of adversity, you see such amazing strength that you can't just help but admire the individuals that live and survive and in fact are productive and loving and raise families under those conditions. There's probably just too many for me to think of. It gave me a sense of ... what should I say. I felt very fortunate. These folks had a lot of strengths that most of us had to find. I really, really, really admired them.

You know what it left me with? Was that we can sit in our university housing or with our families or whatever and think, "Gee you know we are doing just great; we aren't going to be low-income, and we aren't going to be living there." And I came away thinking, we are all just an accident or a lost job away, or a disease away from having to figure out how to survive in communities like that.

BSJ: How you visited any of the dining commons on campus? I wanted to know what your take was on that.

SF: I will, thank you!

SF: I think I was at one of them a couple years ago. There was quite a selection. You really could eat healthy if you chose to.

BSJ: Those are the challenges of the college kids these days. Might be healthy but it doesn't taste that good. The funny thing is, we win the whole ivy award for food on campus. We were supposed to be rated one of the top campuses for college food. So it's rather disappointing when you're thinking, "oh, the food here is going to be really good!"

SF: And its really not. It's not easy making a lot of food for individuals, you know. It's not easy doing mass feeding. Just be glad that it's safe. I mean that's the biggest challenge.

BSJ: What would you say would have been you main motivating factors for choosing to go into this field?

SF: Well, it's interesting. My research has changed a lot during my career. I've done research for 40 years and I have done research in a lot of different areas. And this area I got into because I while I was finding the other work I was doing at the cellular and molecular level to be really interesting. I found it very intellectually fascinating, but I had a series of things that happened personally that caused me to say to myself, "you know, at any moment, my time could come." You know, at that moment, you need to be able to say that you spent your life doing what you wanted to do, that you focused on what you thought was important. And I realized at that point I couldn't say that and that was it. So I said, "hmm I have to do something about that." So I did. I decided to change my research. So it kind of happened for a really personal reason. And that was really it. At some point you're really into your brain you know, very egocentric, "Wow I'm so smart, I can do so much." It's great.

(laughter)

SF: And then something slaps you around a little and then you go, "Oh gee, I'm a human!"

BSJ: Mortality comes knocking.

SF: Exactly.

BSJ: Well, thank you very much for sitting down with us! Enjoy your retirement!

